HANDBOOK

FOR

TEACHERS

OF THE

VISUALLY HANDICAPPED

American Printing House for the Blind
1839 Frankfort Avenue
Louisville, Kentucky

7-5770

HANDBOOK FOR TEACHERS of the VISUALLY HANDICAPPED

Pamphlet File
Research Library
APH

By

Grace D. Napier, David L. Kappan, Dean W. Tuttle
University of Northern Colorado

Woodrow L. Schrotberger
Colorado Instructional Materials Center for the Visually Handicapped

Amie L. Dennison
American Printing House for the Blind

1981 Revision
CARL W. LAPPIN

Fourth Edition Provided and Distributed by the
American Printing House for the Blind
1839 Frankfort Avenue
Louisville, Kentucky 40206
November 1981 Printing

PREFACE

The **Handbook for Teachers of the Visually Handicapped** was first published in 1969 by the Rocky Mountain Special Education Instructional Materials Center at Colorado State College in Greeley, Colorado. The publication is designed as a service for the beginning or inexperienced teacher. The handbook is not intended to be a complete source of information.

Many professionals from various parts of the United States have been involved in the several editions that have been available since 1969. These include Dr. William R. Reid, Dr. Grace Napier, Dr. William S. Wright, Dr. Mel Weishahn, Mrs. Betty Womack, Mrs. Amie Dennison, Dr. Dean Tuttle, Mr. Buck Schrotberger, and Mr. Carl W. Lappin. Recognition should go to the American Foundation for the Blind which granted permission to use the material "Tips to the Regular Classroom Teacher," taken from Johnson's **A Blind Child Becomes a Member of Your Class**, AFB, 1961. Thanks should go to Mr. Fred Guffy, who wrote the section "Common Visual Impairments and Related Problems"; Mr. Buck Schrotberger, who wrote the section on "Orientation and Mobility"; Mr. James Brisnehon, who formulated the illustrations; and Mrs. Linda Tetsell, who illustrated the section on "Orientation and Mobility."

The third edition contained material from new contributors. Two major areas of interest were added. "Audio Reading" emphasizes the importance of reading by listening as an actual reading process that needs to be taught, just as is true of the process of reading print or braille. Techniques of daily living are considered in some detail in "Academics Are Not Enough." Comprehensive coverage is not attempted, but many suggestions which a sighted adult might overlook are pointed out. Carl W. Lappin, Instructional Materials Reference Center Director, has updated addresses in the "Sources of Materials" Section during the summer of 1981.

Professional organizations may be contacted for further assistance and publications.

1. The American Association of Workers for the Blind
   206 N. Washington Street
   Alexandria, Virginia 22314

2. The Association for the Education of the Visually Handicapped
   206 N. Washington Street
   Alexandria, Virginia 22314

3. Division for the Visually Handicapped
   Council for Exceptional Children
   1920 Association Drive
   Reston, Virginia 22091

Portions Updated 1981

TABLE OF CONTENTS

Preface i

I. AN OVERVIEW 1
- Purpose 1
- Content 2
- Philosophy 2
- Procedure for Operation and Development 3
  - Residential School 3
  - Special Classes 4
  - Cooperative Plan 4
  - Resource Room 5
  - Itinerant Teacher Plan 5
  - Responsibility for Program of Service 6

II. TIPS FOR THE REGULAR CLASSROOM TEACHER 7
- Examples of Ways in Which the Resource Teacher or Itinerant Teacher Will Help with Special Needs in Your Classroom 7
- Regular Classroom Teachers Who Have Had Experience with Blind Children Say 8
- Ways to Help a Blind Child Feel More Comfortable and Adequate 9
- Many Children Have Some Sight 9
- Use of Color Words 9
- Use of Mental Conceptions of Surroundings 9
- A Sixth Sense 9
- The Use of Braille 10
- Playground Activities 10
- The Blind Child and His Schoolmates 10
- Maximum Use of Time and Circumstances 11
  - Keeping Children Active 11
  - Encourage Exploration 11
- Much Learning Can Be Gained Through Play 11

III. DAY PROGRAMS AND THE NONSPECIAL EDUCATION TEACHER 13
- Residential School 13
- The Resource Room 13
- Itinerant Teacher and/or Educational Consultant 15
- Educational Counselor 15

IV. FACILITATING ADJUSTMENT 16

V. COMMUNICATION SKILLS 20
- Reading 20
  - The Eyes 20
  - The Ears 21
  - The Fingertips 21
- Writing 22
  - Visual Writing 22
  - Auditory Writing 23
  - Tactual Writing 24

VI. AUDIO READING: AN EFFECTIVE ALTERNATIVE 26
Preliminary Observations on Listening 26
The Importance of Listening 26
Listening Situations 26
Listening Expectations 27
Listening Levels 27
Audio Reading Readiness 28
General Information 28
Auditory Discrimination Skills 29
Auditory Vocabulary Skills 30
Auditory Language Skills 30
Allied Skills 31
Audio Reading 32
General Information 32
Audio Reading Comprehension and Critical Thinking 32
Suggested Objectives for Audio Reading 33
Some Suggestions for the Audio Reader 34
Conclusion 35
Readings 35
Commercially Available Listening Aids 36
Company Addresses 37

VII. ACADEMICS ARE NOT ENOUGH — TECHNIQUES OF DAILY LIVING FOR VISUALLY IMPAIRED CHILDREN: SOME HINTS AND SUGGESTIONS 38
General Principles 38
Personal Care and Grooming 40
Dressing 40
Eating 40
Care of Clothing 41
Housecleaning 41
The Kitchen 42
Sewing 43
Use of Tools for Home Repair 43
Miscellaneous 44
Sources 44

VIII. ORIENTATION AND MOBILITY 45
Background 45
Sighted Guide 45
Position and Grip 45
Transferring Sides 46
Narrow Passageways 46
Accepting or Refusing Aid 46
Doorways 46
Stairways 46
Seating 46
Protection 46
Hand and Forearm Techniques 46
Trailing 46
Navigation 46
Direction Taking 46
Measurement of Distance and Time 46

Compass Directions 47
Familiarization 47
Environmental Information 47
Search or Exploration Patterns 47
Numbering Systems 47
Common Orientation and Mobility Terms 48
References 48
Drawings Illustrating Techniques
Use of Sighted Guide 49
Grip Used with Sighted Guide (Side View) 50
Grip Used with Sighted Guide (Back View) 51
Upper Hand and Forearm Technique 52
Lower Hand and Forearm Technique 53
Upper and Lower Hand and Forearm Techniques
Employed Together 54
Side View Trailing Wall 55
Front View Trailing Wall 55
Locating Dropped Objects
Safest Descent and Ascent 56
Hand Protects Head While Bending 56

IX. SOURCES FOR STATE INFORMATION 57
The Need 57
APH Ex-Officio Trustees from State Departments, June 1981 57

X. SOURCES OF MATERIALS FOR THE VISUALLY HANDICAPPED 61
Association of Instructional Resource Centers for the Visually Handicapped 61
Acquisition of Materials 62
Braille 63
Large Print 64
Recorded Materials 66
Talking Books and Cassette Books 66
Tape Recorded Textbooks 73
Types of Recordings 73
Educational Aids 74
Additional Agencies 74
Hand Transcribed Materials 74
Copyright Permission 75
APH Central Catalog 75
Braille Transcribing 75
Large Type Transcribing 75
Tape Recording 76
References 76

XI. THE EYE REPORT POINTS THE WAY 77
Purpose 77
Description 77
Most Needed Parts 77
Visual Acuity 77
Rx (Prescription) Being Worn 78
Sample Rx's 78
Diagnosis 78

Etiology 78
Prognosis 79
Some...Eye Conditions 79
Albinism 79
Anophthalmos 79
Aniridia 79
Aphakia 79
Cataract (Congenital) 79
Cataract (Adventitious) 80
Coloboma 80
Corneal Opacities 80
Glaucoma 80
Microphthalmos 80
Nystagmus 80
Optic Nerve and Pathway Disorders 80
"The Three R's" 81
Retinoblastoma 81
Retrolental Fibroplasia (RLF) 81
Rubella 81
Refractive Errors 81
Astigmatism 81
Myopia 82
Hyperopia 82
Aids to Visual Functioning 82
Guide to Selecting Optical Aids 83
Counseling 83
NSPB's Eye Report...
Uses 84
Parts 85
Preferred Visual Acuity Notations 86
Table of Equivalent Visual Acuity Notations 86
Field of Vision (charts) 86
NSPB's Horizontal Section of Eye 87
Vocabulary of Terms Relating to the Eye 88

AN OVERVIEW

by
Grace D. Napier

Purpose

The purpose of providing special education for the visually impaired is manifold. In the United States democracy public schools have the responsibility to educate *all* children of *all* the people. This charges school personnel with the political and moral obligation of teaching those who are visually disabled as well as the seeing. In the United States *every* individual is considered important and worthy of opportunities to learn.

A person who has been labeled "blind" may have residual vision by means of which some visual concepts can be acquired. Even though a "blind" child may identify color, look at a picture at close range, see an object reflecting sunlight, or retrieve a fallen article, such behavior is still legitimately within the definition of "blind" and should not be interpreted as malingering, a learning disability, or hysteria. In spite of the things that a visually impaired person can see, there are many more visual tasks that s(he) is incapable of doing because of limited visual functioning. Instead of being viewed with suspicion and doubt, s(he) needs to be encouraged to utilize residual vision wherever it can serve in learning experiences. Just as a child who lisps may need therapy to learn how to speak at a higher level of functioning, so a child with residual vision needs "therapy" or stimulation, to learn how to see at his or her highest efficiency level. By contrast, the totally blind child is so conspicuously blind that the observer readily concedes that such a youngster must accomplish learning without aid from the visual channel.

Although the "blind" child — with or without residual vision — cannot learn in exactly the same ways that normally seeing children do, that child can learn when materials, methods, and experiences are directed primarily toward other channels responsible for acquisition of knowledge about self and environment. Those channels are hearing, touching, smelling, tasting (where feasible), motor kinesthetic sensations, and thinking. Unless otherwise indicated, a blind child understands language when spoken to and responds with speech. Specially prepared teachers (through special education programs) provide the child with appropriate opportunities for learning.

When provided with a suitable educational program as a child and as an adolescent, the blind can realistically expect to be employable as an adult member of society. As an employed adult, this person can earn income and be partially or completely self-supporting, not needing pension checks or welfare checks from public funds. Although special education programs for the blind are extremely expensive in terms of dollars spent (when compared with the *per capita* cost for the normally seeing), the expenditure is of limited duration. With adequate training, however, the blind individual can then begin earning income and not be a financial drain on society. Without special education, this person could become entirely and permanently dependent on others. The latter arrangement is far more costly than the expenditures involved in special education programs.

Special education programs endeavor wherever practical and beneficial to teach the child in his or her community with a minimum of uprooting and disrupting of normal life routine and contacts with seeing persons.

Historically, society has demonstrated a variety of attitudes (resulting in direct and related practices) toward members of minority groups in general and blind individuals in particular. Ancient Greece and Rome, for example, neglected, persecuted, abused, and even deliberately destroyed "inferior" or "different" individuals. Much later, society pitied and protected, but separated the handicapped from itself by establishing asylums or institutions which became "homes" for the handicapped from infancy to the grave. There were virtually no schools offering educational programs or training for employment in adult life. Many educators, psychologists, and other professionals today are promoting the practices of integration of the disabled with the "normal" and are encouraging acceptance into general society of individuals who are "different." The aim is to provide not only academic education but also training in social skills and mobility skills and to offer vocational preparation and placement along with recreational outlets for these "different" people.

The brief summary above aims at acquainting the teaching specialist with the rationale behind present day education programs for the visually disabled. Furthermore, such programs are not merely remotely related to the role of teachers in general education. On the contrary, the teaching specialist sees the general teacher as an integral part of the special education program as it involves and services a child in that teacher's classroom.

Content

In terms of needed curriculum or "what to teach" it must be understood that impaired children must (1) acquire and use the same basic learnings as normally seeing children, and (2) possess additional skills that are made available as formal parts of the special program. Acquiring such skills are not left to chance or incidental learning nor to home instruction.

Children who are visually impaired have life needs requiring skills in computation or problem-solving in number situations, skills in communication (listening, speaking, reading, writing), skills in coping with bodies of information as exist in fields of knowledge such as social studies, science and health, music and art. These children also require skills in recreational outlets, in interpersonal relations, in the practices of mental health, etc. Hence, one can say with safety that almost everything that a normally seeing youngster learns, a visually impaired child also needs to learn, perhaps with some modification or substitution. For instance, a blind child may not use a pencil or pen as the chief mode for writing, but may learn to write in some other mode such as in braille or on the typewriter. The totally blind adolescent is not likely to be accepted for active participation on the football team as recreation or physical development activity, but many normally seeing adolescents are not accepted for the team either, since only a few individuals are required or are properly qualified for the sport involved.

What is often referred to as "special methods" for the blind applies more correctly to special equipment and materials. Whereas the totally blind student will not use a pencil as the chief instrument for writing, s(he) will write by means of a braillewriter and/or a typewriter. Although print editions of textbooks will not be used, braille editions or disc or magnetic tape recordings of the same material will be used. Even though pictures cannot be used in early number work, concrete and tangible objects to manipulate and count can be used. Although a print wall map is not useful, a relief or embossed map can be read with the fingers.

Because children with little or no vision cannot see enough to imitate others, they require formal teaching in areas where normally seeing children learn easily and incidentally through visual stimulation, even without help from adults. Normally seeing children may come to school having many necessary skills already under control, whereas blind children may be functioning on a much lower level. For instance, visually impaired children may demonstrate a need for corrective work in body mechanics and posture. They may hold the head down, droop the shoulders forward, or walk with tiny shuffling steps. If children come from excessively protective homes, they may lack experience in moving about under their own power without being led by the hand of another.

Because the blind child cannot see, s(he) needs training in orientation and mobility — skills in moving from place to place, doing it with speed in keeping with safety, efficiency, self-confidence, grace, and poise. Unable to determine the immediate environment of the classroom with a casual glance, the visually impaired student will need a guided tour to become acquainted with the location of coat room, teacher's desk, bookshelf, etc. In the realm of physical education and active games, the blind child will probably be unable to execute the teacher's directions if s(he) says, "Hold your arms *this* way," or "Run to the goal over *there*." The teacher must put student directives into meaningful words and not rely on gestures to convey meaning.

In these "extra" areas of curriculum, the teacher should not regard the child's inadequacies as evidence of mental deficiency or personality quirks. Rather, the child should be viewed as one who, if s(he) could see, would already possess the necessary behavior or skill, having acquired it through the visual channel. Such learning takes longer to obtain and often requires a one-to-one relationship with the teacher.

Philosophy

Earlier, the rationale underlying special education for the visually impaired was discussed. In this context, it is desirable that the writer attempt to consider the philosophy by which educators and psychologists now approach the child who has less than normal vision.

Visually impaired children are considered to be more *like* normally seeing children than *different* from them. True, they do not see well or do not see at all, but basically, they are children with the same needs as seeing children. Belonging, acceptance, achievement, self-actualization, opportunity for learning, and encouragement to grow and gain independence are essential. The objective of modern democratic education is emancipation, not imprisonment of those being taught.

Teachers who have an exaggerated need to be appreciated are prone to allow students to remain on the dependency level. This is especially true if the student is an impaired one. Dependency or leaning on the teacher feeds the teacher's ego but does not help the student develop skills needed for mastering self and environment. Nor does it result in

independence and maturity. Viewing visually impaired children as fundamentally similar to other children emphasizes potential and minimizes limitations. This by no means implies that a visual limitation is not a problem. It definitely is a problem; otherwise, one would not be concerned about providing impaired children with special education. The difference is in the concept that the blind child is one with a problem, not that s(he) is a problem child. Nor is s(he) a child totally disabled, totally dependent, totally different from other children.

The visually impaired child is an individual, just as other children are individuals. A group of visually impaired children consists of individuals; they are not identical with each other merely because of their visual problems. The visual impairment may be the only factor that they have in common. Mary may be an avid reader while Jane prefers to play with dolls. Jim may like to play the piano while John enjoys tinkering with the inner workings of a radio. Sue may be very academic and well informed, but may not relate well to other persons. Bill may do only mediocre work where books are involved, but may have many friends and demonstrate leadership ability. Therefore, a given blind child may, in fact, have more in common with types of normally seeing children than with other blind children as class or category.

Because children are individuals in their own right, a caution must be mentioned here. It is very easy and yet dangerous for the unsophisticated to generalize and attribute all successes and all failures of blind persons to the blindness itself. If Mary talks too much in class and is a disrupting influence, the teacher might say (but mistakenly) that because Mary cannot see, she has to talk a great deal. Are there no normally seeing children who talk too much? If John does slovenly work in arithmetic, does this mean that arithmetic is too difficult for a blind child? No. Is there no fully sighted child in class who submits messy work, if not in arithmetic, then in spelling, science, or penmanship?

Discipline and corrective measures do not necessarily have to be different when administered to the blind child. For instance, a teacher of first grade might use with normally seeing children the technique of having a disobedient child stand outside the classroom door for a period of time. If so with the sighted child, then it is also acceptable treatment of a blind child. Unfortunately, some teachers find it impossible within themselves to mete out the same kind of correction where the blind child is involved. If this differentiation continues, three unhappy developments may result: (1) The blind child will conclude that the teacher is a "push-over" and will take advantage by being obnoxious, feeling confident that punishment will not ensue. (2) The seeing children will resent the blind child and that child's behavior, reacting to the injustice by which that one alone is allowed to violate classroom standards. (3) The seeing children will lose respect for the teacher because blatant and needless partiality and favoritisim have been shown.

Trying to evaluate the quality of the work performed by a child with a visual loss is usually difficult for the uninitiated teacher. Such a teacher may regard whatever the child does as "wonderful" and "spectacular" when it is only mediocre or poor. The teacher should attempt to see the child as a third-grader or as a twelve-year-old and should measure performance against those standards, not thinking of the child as a blind child whose poorest productions must be regarded the best that one should expect. A child whose intellect is normal or better is stimulated by high, though reasonable standards and expectation levels. If the teacher sets the standards too low, the child is not likely to develop beyond those standards even though potentially capable of complying with more demanding ones. Thus, the child is being trained to do less than the best. If this continues throughout school, the child is likely to be unemployable, because unprepared to give a best effort to a job. Furthermore, children are known to recognize and resent adults who are patronizing and condescending in attitude, especially when those children have a realistic opinion of their own ability. A child may reason: "What's the use of trying anyway? They think I'm a dumbbell." What is even more damaging, the child may adopt the same attitude toward self that the teacher holds, assuming incapability of better work and never really stretching to attain higher goals.

Competent and creative teachers look to the child's future as well as to immediate needs and, in this light, weigh the consequences of all instructional procedures. The child will grow into an adolescent and an adult. (The kind of future available is based, in large measure, on the teacher's wisdom and forethought beginning with the earliest phases of instruction.)

Procedure for Operation and Development

In order to understand the current scene relative to operation and development of programs, the specialist needs to appreciate how present-day facilities have evolved historically, moving ahead step by gradual step as philosophies have changed and new programs have demonstrated success as they have emerged. What was once considered a faltering or daring move has become accepted as legitimate and reasonable. Only then has another new and daring step been attempted.

Previously, societal attitudes were mentioned, the earliest, viewing the blind individual as a liability to society, later as

a ward of the state, and more recently as an integral and responsible member of the community. When education of the blind began in Paris in the late eighteenth century, the residential school naturally evolved from the asylum. For more than a century, the residential (boarding) school was the only type of program available. The first three residential schools in the United States, established in the 1830's were patterned after those already in existence in Europe. The underlying premise was that, although the blind were educable, they had to be educated separately from the normally seeing in order to learn. Consequently, blind children lived in a community of their own, removed from parents and other normally seeing persons (except school personnel) for the greater part of each school year.

Educators, psychologists, and parents were disturbed by the fact that blind children had to live apart from family and home neighborhood. Feeling confident that blind children could learn effectively even if they lived at home and attended an educational program within commuting distance, educators established special classes for the blind and/or partially seeing in public school buildings, centrally located so that a given class could serve several children who would come daily from outlying districts. Although an innovation about 1900, such a class was but one step removed from the residential school, because the blind children stayed in one room all day, working with a specially trained teacher responsible for all instruction of the visually impaired regardless of grade level or subject matter. There was little or no contact with the normally seeing children and their teachers though these groups functioned in the same building. Because the special class was similar to the old-fashioned one-room school, segregation from the seeing was practiced, resulting in lack of communication between the two segments. The blind student classes did not close the residential schools — and this was not their intent — but provided a second type of facility operating simultaneously.

Later, encouraged by the demonstrated success of the segregated or special classes, educators believed enough in the adaptability of selected blind children to venture away from the totally segregated program and to propose the cooperative plan. In this plan, the blind child still leaned very heavily on the special class and its teacher but spent part of each school day in other rooms of the building, associating with normally seeing children and learning from regular classroom teachers. For example, fourth-grade Mary might go to Miss Jones' room for history and sixth-grade Tom to Mrs. Brown's for science. Meanwhile the blind child was officially assigned to the special room in terms of attendance records (and other administrative information) and work involving the learning of braille or the use of special equipment such as the typewriter. This plan was flexible in that each blind child was seen as an individual, able to benefit from certain amounts of integration with the normally seeing. As an individual child manifested readiness for more integration, an individual program was modified to include additional periods in the regular classrooms. Consequently, some children might have been doing all their subject matter work with the normally seeing while others were going only on a part-time basis or, realistically, not at all.

This type of program, of course, was only as good as the special teacher wished to make it. If the teacher were an individual with personal insecurities and excessive needs to be appreciated, s(he) might find it necessary to limit the children's association with normally seeing children and their teachers in order to enhance status with the blind children, thus promoting dependency. On the contrary, a teacher who was well adjusted would probably encourage integration in order to develop independence in the pupils. Another problem was that the special teacher might meet with resistance from the rest of the faculty. The faculty might reason that it had no responsibility to the blind child. Since the special teacher had been trained for it, s(he) should do the teaching. The blind children should not be added to the responsibilities of the regular class teacher. Obviously, the special teacher had to establish excellent rapport with the faculty and find ways of encouraging the faculty to accept blind children in *all* classes.

The cooperative plan usually functioned only through the elementary or grammar grades. After that, the blind child attended either a residential school or the local public high school, perhaps as the sole blind student in the building. In the public schools, frequently there was neither special room nor special teacher. The assumption was that the blind student would have gained sufficient independence and academic skills to function adequately and competitively. Generally, the blind student was provided with special materials (i.e., braille or large type textbooks and typewriter) and special services. The student moved from room to room as the departmental plan dictated and hopefully would meet all assignments and standards of performance.

With little supervision from a teacher acquainted with education of the blind, the public school student did only as well as s(he) wanted to do and frequently within limitations over which s(he) had no control. If the student wished to succeed, s(he) might work conscientiously and do commendable work, even reaching full potential occasionally. On the other hand, the student might be satisfied with mediocre performance and the school personnel might accept this as being a best effort. Finally, the student's report card might be misleading. One could not be sure if "C" was the best that the student could do or merely the result of a half-hearted attempt.

Similarly, an "A" might be a grade truly earned or it might be given by a generous teacher who marveled at whatever the blind student did.

Historically, three plans were then being offered concurrently. This does not necessarily mean that a child living in a given community had the choice of these plans. Though the three plans existed nationally, a specific town might have no special provision for the blind child, requiring attendance at a residential school wherever it happened to be located, taking the child away from home. Some segregated classes emerged into the cooperative plan. Town A might have the segregated plan while Town B had the cooperative. Often a cooperative class was established without its ever having been the segregated type. The nature of the class was usually a reflection of the personality and philosophy of the school administrator and/or of the teacher.

In the late 1940's the resource room plan was becoming more popular. A change of philosophy saw the blind child as one who should be an integral part of the regular class for normally seeing and not one set apart by belonging to a "special" room in the building. Administratively, the blind child was an official member of the regular attendance roll. Hence, Miss Wood, teacher of second grade, would have Johnny, a blind child, assigned to her. In the building was a resource room where the specially trained teacher of the visually impaired would have a supply of special equipment. Here work was done with the students who reported at assigned periods or as needs dictated. Understandably, a first-grade blind child would spend more time in the resource room than a sixth-grade blind child, because the former might be learning to read and write through braille, whereas a sixth-grader probably would have these skills well under control. Similarly, a first-grade child requiring braille might need more time in the resource room than a first-grader who could use the large print of a first-grade reader. *All* teachers had to work cooperatively if visually impaired children were to benefit from this plan. The resource room teacher was responsible for preparing materials in the medium needed, for supplying parallel texts so that the visually impaired child could use the same texts as the seeing children, and for anticipating needs such as a map of the United States for fourth-grade Sue or a certain poem for seventh-grade Bill. The regular class teacher had to know how and when the resource teacher could help in the general instruction and the resource teacher had to be familiar with content, materials, and methods for all grades in order to anticipate needs and to tutor the blind child.

Like the cooperative plan, the resource room plan was most often found on the elementary level, sometimes extending into high school levels. The junior or senior high school student attended the local school and frequently was quite independent.

Also in the 1940's the itinerant teacher plan came to be known. Under this arrangement, the specially trained teacher moved from school to school throughout the day, visiting and teaching individual visually impaired children. The itinerary might be confined to a given town or city or might encompass a county or include more than one county. When the teacher became familiar with the case load, s(he) tried to distribute the time according to individual needs and geographic location. For instance, a first-grade child might require a daily visit whereas an eighth-grade pupil might need only a weekly contact. If three children were located close to each other geographically, the teacher might be able to visit all three in one morning; if they were scattered more widely, the teacher might visit two in the morning and one in the afternoon.

Upon arrival at a scheduled school, the itinerant teacher might do one or more of the following: tutor the visually impaired child, observe the child in the regular classroom situation, confer with the child's teacher, prepare materials, check the child's special medium (braille) papers and either score them with a penciled notation or copy in print what the child had written in braille so that the regular teacher would know what the blind child had brailled. If the special teacher planned to tutor the child, the child would leave the classroom and work somewhere else in the building with the itinerant teacher. When the itinerant teacher left the building, the child would return to the regular classroom and resume work with that teacher.

The resource room plan and itinerant teacher plan might be contrasted here. A less mature and dependent child generally would require the resource room plan, since the special teacher is not readily available on an itinerant plan. Unexpected needs cannot be met as easily or quickly in the itinerant teacher plan. The child who needed a certain map would have to wait until the itinerant teacher next returned or could forward them through some method. Because the itinerant teacher is in a given school only for an hour or so, it is possible to spend most of that time tutoring perhaps just searching for a spot to use for tutoring. Conference time with the teacher and other school personnel would then be neglected. Communication breakdown between itinerant teacher and

others would follow. Each would go a separate way; each would try to guess what the other is doing with and for the child. Because the itinerant teacher is not available all day and because communication fails, the special teacher may not be aware of a problem until it is major and critical. The itinerant teacher spends a great deal of time traveling, neither teaching nor rendering professional service. Such a teacher may feel at times that s(he) is little more than a delivery service bringing a map here or taking an arithmetic book there. This teacher may also feel more an outsider or visitor in each of the schools than an integral member of the faculty.

All five types of program and combinations of some of them can be found throughout the country. Even the oldest form, the residential school, continues to offer service. In the foreseeable future, some students shall continue to be best served by the residential school and one should not anticipate the withdrawal of this type of program. Actually, the residential school may be accepting more and more multi-impaired blind children who might not fit easily into other programs. Perhaps, a program designed specifically for the multi-impaired blind child can more realistically meet the child's peculiar needs when in a residential setting, than can a program conducted in a regular day public school.

If the specialist encounters a blind child in the community who is not enrolled in any school, what is the specialist's responsibility? If the administrator and the staff of the school are not familiar with services available to the impaired child, the specialist should suggest that the director of public instruction on the state level be contacted for a professional recommendation in the given case. In the department of public instruction on the state level there may be an individual responsible for special education. This person should know where the residential school is located and which towns have classes or services for the visually impaired child. (*See* Chapter 10, Sources for State Information)

One might wonder, too, who pays the special teacher or who finances the educational program for blind children. Most residential schools are public, tax-supported schools. Some residential schools are administered by the state department of public instruction. Others fall within the state department of institutions along with prisons, state hospitals, and child welfare boards.

Public school day programs may be financed partially or wholly by the local school district. For instance, if Big City has a resource room, Big City may pay the entire salary of the resource room teacher. Districts sending children to this program then pay the receiving district. In some cases, e.g., New York State, several school districts employ the same teacher and contribute to that teacher's salary. In other instances, a state agency such as a commission for the blind provides the itinerant teacher, pays the salary, and sends the teacher into the school district where there is a blind child, making no charge to either the child's family or the child's school district. (New Jersey uses this approach in great measure.) The state department of special education may contribute to the local school district, sharing the cost of maintaining a program or employing the teacher.

In summary, a given state may have a residential school and various types of day programs simultaneously. Some states have a residential school and virtually no day program. Others, like New Jersey, have no residential school but have day programs; when a residential school is needed for a specific child, the child is enrolled in one outside that state's boundaries. Where more than one type of program is available within a state, a given child might be enrolled in several of them in sequence throughout the educational years. For instance, the child might begin in a residential school. When ready for fourth grade, s(he) would be transferred to a resource room. The secondary school years might be spent in a public high school where the student is serviced by an itinerant teacher. Any sequence and/or combination is possible where several types of programs exist concurrently. The child's individual needs should be considered first so that the best arrangement *for that child* can be made.

EDITOR'S NOTE: The special teacher for whom this Handbook *was designed may find difficulty relating to the regular class teacher with whom a visually handicapped student is enrolled for the first time. Among the better and more inclusive articles addressed to this situation is the one reproduced here.*

TIPS FOR THE REGULAR CLASSROOM TEACHER*

When you learned there was to be a blind child in your class you probably wondered how you would be able to manage the situation and why the child was not being placed in a residential school for the blind children. A gradual development in educational philosophy has demonstrated that a blind child will benefit greatly from attending local public and private schools. One of the chief reasons for this development is the desire of parents to have their child at home where he can experience the warmth of family life and share in its realities. Through attendance at the neighborhood school the blind child develops and matures while sharing the same opportunities and challenges as his sighted schoolmates. Day by day living of sighted children with a blind child is one of the most effective means of breaking down misconceptions and prejudices about blindness.

Children and adults very quickly perceive the effectiveness with which a blind child, with a minimum of special attention, can take his place as a successful and contributing member of the school and community life. In addition, the costs alone of maintaining large residential schools point to the wisdom of the establishment of good educational facilities in local areas.

This section was written to help acquaint you, the classroom teacher, with the idea of integrating a blind child into your class.

Your responsibility to the visually handicapped child in your group is the same as your responsibility to other pupils. You help them to develop physically, socially, intellectually, and morally. A teacher must take every child where he is and lead him as far as the limitations and potentialities of both the child and teacher permit.

Try to remember that if you are a good teacher for sighted children you can also be a good teacher for a blind child. Teaching and learning processes are fundamentally the same. Some adaptations will be necessary in methods and materials.

To help you with this aspect of having a blind child in your group, you will have the support not only of the administrator of the school program, but also of a resource teacher. This teacher may be located in your building, or in some instances an itinerant teacher will come to help you for certain scheduled hours each week. These specially prepared helpers will guide you and the visually handicapped child in the use of any special tools or techniques appropriate for his instruction.

The function of a resource teacher or the itinerant teacher is the same. The only difference is that the resource teacher has headquarters in a school where several blind children are enrolled, whereas the itinerant teacher serves different children placed in various schools within a certain area.

Examples of Ways in Which the Resource Teacher or the Itinerant Teacher Will Help with Special Needs in Your Classroom

In fulfilling her responsibility to your class, the resource teacher or itinerant teacher may assist you with the blind child in your group in ways such as the ones listed below:

1. Supplying reading readiness help.
2. Providing in braille the necessary written and reading materials so that the blind child can follow your program.
3. Teaching the child how to find his way in the halls, on the stairs, to the restrooms, in the cafeteria, and on the playground. This type of help is sometimes referred to as teaching skill in orientation and mobility, or mobility instruction.
4. Helping the child to learn how to use the playground equipment.
5. Suggesting indoor and outdoor games which the entire class can enjoy.
6. Helping to adapt lessons in arts and crafts.

---

*Ysabel Johnson, *A Blind Child Becomes* a *Member of Your Class* (American Foundation for the Blind Publication: Educational Series, No. 14; New York, June, 1961). (Reprinted with permission)

7. Occasionally going along on field trips to help the child learn as much as possible from touch, smell, hearing, and even taste.
8. Working out a convenient system so that materials can be prepared, organized, and located so they will be readily available for the blind child's use in your class.
9. Guiding you in learning to know as much as possible about this child. Gradually with this assistance you can piece together parts of his "biography of reactions." These are all the interactions of an individual with the world around him. Your resource or itinerant teacher is prepared to help you in interpreting these interactions in order that you can be most helpful and enjoy fully the blind student. Loving and patient efforts of an understanding person may undo in the future what unwise treatment has wrought in the past.
10. Keeping in touch with local, state, and national resources which can serve your program from time to time.

Since there is more than one way to solve a problem, no doubt you and the special teacher will be exploring new approaches. The classroom teacher and the resource teacher or itinerant teacher, through their varied experiences and training, are often challenged by novel ideas, and to develop them creatively with mutual gain for teachers as well as children, both sighted and blind.

The resource or itinerant teacher will assist you in facing problems as they present themselves. The creative thinking, initiative, enthusiasm, and experience of the regular classroom teacher together with that of the specially trained teacher result in curriculum and methods of procedure specifically adapted to the needs of the blind child.

This special teacher is qualified to aid you to see problems in their true perspective, no more nor less serious than they actually are. Together, with her suggestions and the support of the administrator of your school program, you will be able to work them through with surprising satisfaction.

Regular Classroom Teachers Who Have Had Experience with Blind Children Say . . .

Do not panic! The handicapped child adapts surprisingly well to circumstances as they arise and is eager and able to do most of the same things as the sighted children when given the opportunity.

If you are natural and relaxed, the child will develop in a natural and relaxed way.

A pat on the head or a gentle arm around the shoulder says a great deal to a blind child.

Help the child feel that he belongs to the class; but give him no special privileges.

A blind child can learn that lack of sight does not absolve him from the need for discipline.

Allow the blind child the opportunities to grow in independence just as you do other children. Before long the entire class will be talking about how proud they are of his developing skills.

The blind child may need special kinds of help. This is true of all children from the very slowest to the most gifted one.

Try to describe activities carefully and to be consistent in your directions since the blind child cannot see you. You will be happy to notice that your improved skill in giving directions and the children's attention to following oral directions will help the entire class.

Several teachers reported that often a child in the regular class who had many problems showed marked improvement in his own social adjustment after working voluntarily with the blind child. This advantage was shared by the entire class.

The standards of grading should be the same for the blind child as for other children. Too much emphasis can be placed on blindness of the child rather than upon his other normal abilities.

Help the blind child to experiences which will bring to him a generous share of feelings of security and understanding, from yourself as well as from his sighted classmates. If you believe in any child, he will respond to your confidence in him.

You may be making your finest advances when appearances are least in your favor. Periods of growth and regression and then further growth are typical of all learning and of all children.

One teacher reports that the most important thing learned was the fact that having a blind child in a regular class was much easier than she had expected.

To have a blind child is a fine experience for you and your children. Relax and enjoy it.

Ways to Help a Blind Child Feel Comfortable and Adequate

In unfamiliar places a blind child is most at ease walking with a friend, placing his hand lightly on the other child's arm at the elbow.

Let a blind child follow your lead. Never push him from behind.

In becoming acquainted with his new classroom the blind child will find it helps to have a few points of orientation, such as the sink or the door, and sound cues.

Allow the blind child to explore and find things for himself. Placing his hand here and there does not give him a total and meaningful orientation to surroundings.

Many Children Have Some Sight

Vision is a process which must be learned. Teachers can help those with some sight, no matter how little, to see what they are capable of seeing. In some cases vision is increased as it is practiced. Unfortunately, some individuals have vision of which they do not take advantage simply because they have not learned to use it.

Residual vision may be shown by *light perception*, *color perception,* or *object perception*. Many people have the misconception that if a person is blind he sees nothing at all. However, a legally blind person may still have some vision if he is taught how to use it. It is generally recognized that the use of whatever sight may remain does not impair or aggravate most eye conditions. It is interesting to note that many legally blind individuals can and do use print as their means of reading.

The child with *light perception* may be taught to use whatever he can see to help him to get about more adequately, comfortably, and with more self-assurance.

The child with *color perception* may not be able to draw a picture in much detail. Yet he will probably enjoy working with bright colored paper, looking at colored pictures, or experimenting with paints and chalks at the easel.

Children with *object perception* should be encouraged to make maximum use of whatever sight they may have by giving them attractive materials, by providing comfortable lighting, and by initiating reasons for using that sight which the children understand. As in the case of a child with color perception, you might experiment in using kaleidoscopes, pictures of various sizes and colors, or colored paper.

Use of Color Words

Although we cannot know what concepts a blind person may have about the names of colors, we can help him develop a feeling and association about color words. Blind individuals are surrounded by people using color words. Although they cannot see the colors, they may develop an awareness of how others feel about colors and how color words are used.

Fire is red and hot

Water is blue and cool

Pink is feminine and soft

It is a good idea to compliment a blind child when he wears a color which is particularly suitable to him. He should learn to know the pleasure which a good appearance makes to himself and to his sighted companions.

Use of Mental Conceptions of Surroundings

Try to help the blind child to build a mental concept of his surroundings. This mental picture, however, need not necessarily be in our own visual terms, but in terms which are meaningful to the child. Sometimes he reveals how things appear to him by making models in clay. Art work may show which parts of a total impression are most important to him and which parts are less meaningful. The blind child, for example, may express himself in terms of how the touch of things appear to him. It would seem odd for him to speak of the reflection of moonlight on rippling water, whereas he might discuss the ripple of a pattern of brickwork on a garden wall.

A Sixth Sense

There are individuals who tend to believe that blind people have a sixth sense, providential compensation, or extraordinary talent. Usually a combination of hard work, the cultivation of a good memory, and the development of latent natural faculties permit some blind people to function very well. The "sixth sense" is a poetic phrase having no foundation in truth.

The Use of Braille

All people have certain tools, such as printed books, which help them to learn and to communicate. Although blind children cannot see to use print they are most fortunate to have their own tool and method of communication which is known as braille.

Braille is adaptable for use in reading, writing, mathematics, music, foreign languages, and science. The classroom teacher need not learn braille herself, but she should be able to interpret its function to the class. The resource teacher or itinerant teacher will instruct the blind child in the use of braille.

Some blind persons and even relatives of blind persons tend to avoid braille because of its association with lack of sight. As a teacher you can show respect for this tool and interpret it to the class as a very useful method of communication.

Show it off to all the children. Some sighted children enjoy it as a secret code.

All children like name tags on their desks, lockers, or coat hangers in print and braille.

Valentines signed by a blind child in braille are just a little special and always fun for the sighted children to show at home.

Braille labels and signs in the room attract the attention of all children. So do braille calendars, clock faces, rulers, scales, and thermometers.

Playground Activities

You and your resource or itinerant teacher will adapt many of the usual games by methods such as using sighted partners, following the sound of a bell, and clapping hands. In the lower grades there has been little difficulty including the blind child in the games.

Some of the upper grade physical education presents more of a challenge, since there will be certain activities which are not suitable for blind children. There are games such as basketball, tennis, and football in which they cannot enter for competition. However, they may partake of most games for fun. For instance, the blind child can join in various ball games where the use of sound can enable the child to participate. It is important that he have a basic understanding of popular sports and understands their terminology. Blind people do enjoy following the World Series, football games and other sports events on television and radio. This will be of social value in discussing sports, a frequent topic of conversation.

To appoint the blind child as score-keeper or equipment custodian does provide him with a mental exercise, but not with physical education. He may enjoy this activity, but should not feel that his physical education will be so restricted.

Try to determine the blind child's physical needs such as development of larger muscles, better balance, an even gait, ability to run and skip freely, and to correct posture. There will be sighted children who share some of the same needs, and these children may have their *physical education* together in such activities as using rings, trapeze, ladders, balancing boards, jungle gyms, and gym horses; and in doing tumbling, team stunts such as building pyramids and weight lifting. Although usually not possible on school grounds, bowling, swimming, roller skating, ice skating, and wrestling are favorable sports in which blind and sighted can participate together.

These are only suggestions of types of activities. The important thing is that the blind child is able to fulfill some of his own physical needs.

The Blind Child and His Schoolmates

Teachers about to have a blind child in class usually ask how to prepare the other children for the coming of this child. Let us remember that each child and situation differs so that it is unwise to make general statements as to how to cover specific situations.

However, many teachers who have had experience in teaching blind and sighted children together feel it better to begin school by calling no attention to the fact that one of the children in class is blind anymore than she would point out that one child has red hair or a Swedish name. Later, however, should the blind child be absent or out of the room, she might hold a little discussion in which she guides the class to realize that although the blind child cannot see, he can participate in most activities. Many things will be difficult for him, but few will be impossible. The teacher can point out how the blind child achieves the same goals by using different means.

Children can easily be made to realize that we are all different. Some have difficulty with arithmetic, others in sports, some in reading or singing. There are children with a crippled leg, poor hearing or a weak heart. What is

important is that each of us tries to do his best.

The teacher now has an opportunity to make positive use of an unfortunate situation by enabling the children to see for themselves that everyone is endowed with different gifts. It is best to be thankful for what we have and make the fullest use of our abilities.

All children can learn from their relationships with those who are handicapped It is the able teacher who makes the presence of a blind child an advantage rather than a disadvantage as she works with her students throughout the year.

Maximum Use of Time and Circumstances

KEEPING CHILDREN ACTIVE

All children must learn to make proper use of their time if they are going to satisfactorily increase their progress and development. Try to find avenues to keep the blind child active physically and mentally A blind child has as much to learn, and the ability to learn as well and the same amount of curiosity as other children when he is given appropriate opportunities.

ENCOURAGE EXPLORATION

Encourage the blind child to move about. He can develop his natural inclination to explore and to learn. Your guidance can nurture such inclinations.

Have interesting things about that will make a visually-handicapped child curious and wish to move about. These may include:

A science table
The week's cafeteria menu
Pets such as a turtle, hamster, or a mouse
A new braille book with an intriguing cover on the library table
Special notices on the bulletin board which change frequently

Blind children also like to share in classroom responsibilities and try things for themselves. They may contribute by:

Helping put away equipment
Suggesting songs to sing
Leading the flag salute
Making weather reports
Watering the plants
Caring for pets
Emptying waste baskets
Sharpening pencils
Passing paper
Going on errands
Dusting

Much Learning Can Be Gained through Play

Let children see a reason for doing things. Many times suggestions can be developed through games. Rather than having a young child stringing beads aimlessly, why not let him learn the parts of a percolator, make something with hammer and nails, construct a building with blocks, or even prepare a cake or some jello. Playing with dolls gives practice in dressing and using snaps, buttons, and zippers. Children enjoy paint, clay, water and sand — they like to take apart and put together.

This list of *after-school* activities of some blind children gives an idea of the range of interests these children pursue.

Scouting
Sewing
Rowing
Swimming
Brownies
Wrestling
Bicycling
Ice skating
Music lessons
Sunday School
Roller skating
French lessons
Neighborhood play
Horseback lessons
Radio transmission

Some communities have part-time work programs designed to assist older students in finding suitable employment.

When first teaching a blind child you may probably be more concerned about the fact that he cannot see than about anything else. At this time his blindness may be, to you, his most distinguishing characteristic.

In teaching your class and becoming acquainted with the ways of each child you will observe and try various methods and approaches. During the course of the school year you will have times when you will be discouraged, amused, saddened, or puzzled over apparent stand-stills, or cheered by sudden progress. Is this not true for all teachers of all children?

As you live day by day with a blind child you will gradually come to feel that child development and the basic learning processes are the same for him as for all children. As you come to know this child better, the importance attributed to the fact that he cannot see will gradually lessen. You will come to see his other characteristics and know his individual personality. Then you will begin to realize that this is just another child who happens to be blind.

DAY PROGRAMS AND THE NONSPECIAL EDUCATION TEACHER

by
Grace D. Napier

For the classroom teacher (generalist) to appreciate services and resources made available by the specialist, it may be helpful to review a few points. There are three basic programs in operation. Each involves and relies heavily on the generalists' professionalism and experience with normally-functioning children. The three programs, while extremely important in their historic perspective, have significant pragmatic aspects with which the generalist should be acquainted. Any teacher in any way dealing with the visually impaired student should be made acquainted with the function and practical aspects of:

1. The residential school that utilizes local public schools for a portion of the program
2. The resource room program
3. The itinerant teacher or educational consultant program

The Residential School

The residential school, as the name implies, is a boarding school where visually impaired children (usually limited to those whose vision is within the legal definition of blindness) attend classes, eat three meals a day, have recreation, and sleep. Many residential schools are self-contained, i.e. the total program operates within the confines of the campus including auxiliary facilities such as a child-care center. Teachers in the off-campus community are not involved.

Again, some residential schools place carefully selected students in a local school for a portion of the school day. On the senior high school level especially, the students involved might take all their courses at the public high school and then use the residential facility as their home away from home and as an instructional materials center for textbooks, reference books, maps, models, tutorial help, reader service, etc. In this arrangement, the visually impaired student is likely to be enrolled in the generalist's class. Ideally, the residential school appoints a teacher to serve as liaison between residential and public schools in order to insure adequate supportive service to the general teacher. With the special educator as a partner, the generalist can share expertise and the two can arrive at mutually approved objectives and expectancies. As coordinator, the specialist should assume the responsibility of informing the general teacher about the services and materials available from the residential school. These enable the visually impaired student to function more adequately in classes geared primarily for students who have normal vision.

"Problem area" classes such as science laboratory, geometry, industrial arts, home economics, physical education, and art are less threatening to the general teacher once the coordinator explains how special equipment and tutorial service provided by the residential school make it possible for the special student to compete with seeing classmates. Two conditions can then be met: success on the part of the special student while enrolled with seeing peers, and adequate teacher time and attention for all other students. It is imperative that the specialist lead the regular teacher to understand that the inclusion of the special student need not mean inordinate drain on that teacher's time or in any other way deprive the seeing students. The visually impaired student (unless visual loss has just recently occurred) has mastered basic skills such as reading, writing, and computation and has probably had previous work in such skills as map reading and science experiments.

The generalist must also be encouraged to involve the special students in extracurricular activities at the local high school. Such encouragement provides the students with a greater variety of activities to meet their interests and abilities than can be offered by the residential school with its smaller population. Furthermore, special students have much in common with seeing students and should use clubs and social functions at the regular school to afford them the experience of rubbing elbows with seeing persons. After all, the visually impaired student is living and will live in a world where most individuals see normally.

The Resource Room

The resource room usually operates for elementary and junior high school levels only (rather than for senior high school). In this program, a special education teacher (trained in teaching visually impaired children) has a

designated classroom in the regular school building Visually impaired children are enrolled in the various grades but all are serviced according to schedule and need by the specialist.

When the regular teacher learns there is a blind child in the class, questions arise as to proper ways to manage the situation or the desirability of placing the child in a regular rather than in a residential school for blind children. It should be explained to the regular teacher that developments in educational philosophy have demonstrated that blind children benefit greatly from attending local public and private schools wherever this is feasible. One of the chief reasons for this development is the desire of parents to have their child at home where s(he) can experience the warmth of family life and share in its realities. Moreover, through attendance at a neighborhood school, blind children develop and mature while sharing the same opportunities and challenges as their sighted schoolmates. Day by day co-existence of sighted and blind children is one of the most effective means of breaking down misconceptions and prejudices about blindness.

Blind children, with minimum special attention, can take their place as successful and contributing members of the school and community life. In addition, the costs alone of maintaining large residential schools point to the wisdom of the establishment of programs within existing educational facilities in local areas.

The resource teacher attends to each child according to the child's age, grade level, maturity, intelligence, etc. The resource teacher sets up a schedule with the regular teacher as to when the special child will be in that teacher's room throughout the day and week. The specialist will also work closely with the regular teacher to insure that s(he) is aware of the regular instruction and how the specialist can best assist the child in achieving goals. Provisions are also made to insure the availability of the specialist if the regular teacher has need for consultation or services at a time other than the scheduled hours.

The specialist is, of course, not a supervisor but a peer. When the specialist inquires how the regular teacher is teaching a given lesson (such as long division), the specialist should make clear that this is not an attempt to check on the regular teacher's methodology. Indeed, just the opposite is true; the specialist needs to know the regular program in order to work with the child with similar approaches. The special teacher may desire to observe in the regular teacher's room. When such a request is made it should be explained that the motive is to see the special child functioning in a group situation, an entirely different context from the one-to-one relationship in the resource room. If the specialist offers a piece of equipment or some other materials, the offer should be explained as an attempt to share with the regular class. For instance, a relief map of the United States will be invaluable to all children rather than only the special child. This and other modified learning aids such as recordings or mathematics devices are always available through the specialist.

Securing textbooks and supplemental books is the resource teacher's responsibility. But the specialist cannot do this alone and must rely heavily on the principal, curriculum supervisor, or regular teacher to supply specific books, and should notify these persons of needs in advance to allow time for their collection. This process, called "sourcing," is a crucial element in a successful cooperative program. Even though a request seems to come early, it is essential to act in advance to avoid time pressures. For example, the specialist may ask in January for books the special child will be using in the regular room the next September. This is not too early to begin sourcing. Some books will already be available and a simple telephone call or letter will bring them to hand. But, other books may have to be made — that is, copied — for the special child. This takes time and demands the efforts of many volunteers. Normally, for example, about 600 hours are required to braille the average high school text. The specialist should explain the specifics of this problem to the regular school personnel. Their clear understanding of the problem usually elicits complete cooperation.

In order to be of maximum assistance to the regular teacher the resource teacher needs advance notice of the regular school's materials. For instance, if the regular teacher sends at ten o'clock in the morning a test to be brailled for use at eleven o'clock, it is difficult if not impossible for the specialist to comply. Realistically, the specialist is probably scheduled with another child during that hour and may not be able to braille the test unless that child is deprived of a lesson that day. However, if the regular teacher gives a copy of the test even one day before needed, the specialist then may have time to prepare it after school, that evening at home, or first thing the next morning. In short, the resource room program succeeds best in meeting the needs of the visually impaired child when all the teachers in the building cooperate with each other. Therefore, the regular teacher should be encouraged to receive the resource teacher — as the name implies — as a source of help and support.

Itinerant Teacher and/or Educational Consultant

The itinerant teacher is, as the name implies, a specialist who provides services by traveling from one school to another where visually impaired children are enrolled.

The place of the itinerant teacher needs perhaps an additional justification. Just as one would not advocate having all American children attend boarding schools, so one would not champion the idea that all visually impaired or blind children attend boarding schools. Now, when only a scattering of blind children are enrolled in any one regular school, it is necessary that the resource specialist move from school to school in order to carry an adequate load and to justify funding.

As the resource teacher is situated full-time in one school, the itinerant teacher stands beside the classroom teacher, to assist in the education of the special child. History has demonstrated that the itinerant program, where it applies, is an effective and successful approach.

In attempting to establish a working travel schedule to service schools where visually irnpaired children are enrolled, the itinerant teacher must consider the total case load, distances between schools, and individual factors such as grade level and intelligence. The service needed should also be determined in line with the benefits reported by the regular teacher in whose classroom the visually impaired child is enrolled. How often the special teacher visits the student should be dictated by factors suggested above and others as well. The visually impaired student might be visited three or four times a week or only bi-weekly. Each visit might last thirty minutes or two hours, again hinging on the child's needs.

When the itinerant teacher arrives, s(he) usually reports to the school office. After reporting, the normal procedure is to then visit the regular classroom in which the special student is enrolled. The usual procedure is for the special child to leave the room and work with the special teacher for the duration of the visit, unless the latter has other duties to perform while on site. Where the specialist and child work should be determined by time of day and available facilities: in the lunchroom before or after the regular lunch period, in the library, in a conference room, in the teachers' lounge, etc. Actually, the two persons do not require a large room. When the special teacher is ready to leave, the student returns to the regular room and is again under the regular teacher's immediate supervision.

What kinds of tasks might the itinerant teacher do while in the school building? S(he) might transcribe material that the regular teacher has requested. S(he) might read the child's braille papers and either grade them for the regular teacher or interline them with print so that the regular teacher can grade them. The specialist might confer with the regular teacher when this can be arranged.

A close working relationship between the itinerant and the regular teacher is crucial. A communication system whereby each can leave notes for the other may suffice at times. However, written notes do not replace the all-important personal contact when it can be arranged. The regular teacher should be encouraged to feel free to let the special teacher know what kind of tutoring is needed. The specialist will, in turn, report what kind of help was given and to what extent a lesson was covered in the follow-up request.

The itinerant teacher should provide the regular teacher and the school office with a schedule. This should be a complete schedule, not just the time for one school. A complete schedule expedites interim contacts when needed. If the specialist cannot keep an appointment, the school or teacher should be notified by phone and/or in writing. If the regular teacher's schedule has changed or if the special student is absent, the regular teacher should be encouraged to send a message to the special teacher to avoid a needless trip to the school.

Educational Counselor

The educational counselor is a similar functionary to the itinerant teacher and, in fact, may be the itinerant teacher. One person may wear two hats. While in the role of a consultant, this person does not teach but works in the student's behalf, nonetheless. On the secondary level especially, the consultant may visit the high school for a given purpose but not to teach the student. Instead, the consultant may confer with the science laboratory teacher or the guidance counselor. As the consultant, the specialist serves as a coordinator of many services. As a special educator, this person provides information, suggestions, referral service, or interpretation of visual needs, ophthalmalogical reports, vocational goals, etc.

In summary, the regular teacher should have professional help from special educators when there are visually impaired students in the regular class. The general teacher who has expertise to draw on from the residential school teacher, resource teacher, and itinerant teacher, has strong and effective support in teaching and integrating the child whose vision is less than normal.

FACILITATING ADJUSTMENT

by
Grace D. Napier

The following suggestions are directed to the adult who is professionally responsible for the visually handicapped child and the individuals who constitute the environmental influence on that child. Basic to the purposes of this educator is achievement of acceptance for the child as a worthy and functioning member of the environment group. Much work and expertise is required to establish the impaired child as a full citizen of the peer society deserving of the same share of common courtesies so naturally and easily extended to the seeing youngster.

The suggestions assume the blind child is integrated in an educational setting with seeing youngsters of the same grade and/or age level. Moreover, they remain suggestions, not rules, laws, or inflexible techniques. By no means is the list comprehensive. The reader will perhaps know of many approaches equally helpful as those presented here. But there is a need to collect some of the most common proven methods for easy reference. The suggestions can improve conditions for both the child who is blind and for his seeing associates. The suggestions have not been listed in any purposeful order since application is dependent upon individual situations.

1. The specialist should refer to the child by name, "John" or "Mary," never alluding to the child as impaired, e.g., "the blind boy." If the specialist uses the child's name, others are more likely to imitate the pattern, thus, establishing a positive identity and constructive image.

2. The specialist should allow the child to explore the area in which s(he) will be expected to function routinely. The child can come to school a day or so before the official session begins in order to become acquainted with the routes from there to such places as the exit of the building or the washroom or the cafeteria. This does not imply that the child is to be shown the whole building first — only those areas that are pertinent to immediate needs. This practice experience will help to minimize initial inadequacies, thereby permitting the child to demonstrate earlier some self-help skills and degree of independence.

3. The specialist should establish, from the beginning, certain physical and social limits of exploration. For example, a child is shown the teacher's desk, allowed to examine only the top and outside, the same socially acceptable boundaries held for other children. If the child should happen to touch a personal item, such as a teacher's purse on top of the desk, touching for purposes of identification can be allowed, but of the outside of the item only. The blind child has to be carefully taught the principles of privacy and the definite ways to avoid violating them.

4. When assigning a hook for wraps, the specialist should either find one that is easily locatable by means of some other object, (e.g., being the first one from the corner of the closet, having an identification placed on or near the hook, such as a wrap of string if the other hooks are bare). The child may need physical or at least verbal guidance at first, but from the beginning, should be expected to put forth real effort to accomplish the task of locating the assigned hook and hanging up the garment.

5. The specialist, in the beginning, should avoid allowing too frequent moving of large or semistationary pieces of furniture such as the teacher's desk, piano, bookcase, heavy table, etc.; these items soon become landmarks for the child who is blind. Later, once the child has gained confidence and orientation, the large objects may be moved if necessary, provided the child is told about the changes. As the child achieves greater mobility skill, it will be possible to rely less on extraneous items in proceeding to a destination.

6. To protect the child from needless bumps the specialist should be sure that all doors are either completely closed or completely open, that drawers are pushed in, and that chairs do not jut out into the usual pathway. If the child is reasonably sure that the walk area is free from hazards, there is greater confidence and willingness to be mobile.

7. When giving guidance verbally, the specialist should relate to the child's body and orientation, not to his or her own. As an illustration, when one tells the child "left," the reference must be to the child's left. Such confusing terms as "this way" or "over there," usually accompanied by gestures should always be avoided. One should be verbally specific, saying, "Come toward me," or "Go toward the door," or "In front of your left foot."

8. From the beginning, the specialist should insist upon obedience when giving directions or commands especially where the child's safety is involved. When the child is walking alone and is told, "Stop," stopping should follow instantly. Later, the child can ask why the command was given. A child lax in obeying may run into a door or fall down a flight of stairs or over a ladder in the walking path.

9. When speaking to the child, a conversational or normal level of volume should be used unless distance warrants otherwise. One does not need to shout at the child to be heard. The child is blind, not deaf.

10. When coming upon the child, the specialist should address the child by name and identify self. The child learns to associate voice with name and can quickly learn to respond with the specialist's name upon hearing the specialist's voice. One, of course, should never play guessing games with the child by asking, "Who am I?" This conduct is offensive and can be traumatic for the blind child.

11. Upon entering a room where the blind child is alone, the specialist should speak out even if with nothing more than "good morning," so as to notify the child of who is in the room. With a seeing child, one might not speak; one might nod or smile in the child's direction. Recognition would be instantaneous. But the least action dependent on sight must be modified where the blind child is concerned. One also should never "test" the blind child, e.g., tiptoe around to see how long it takes for the child to become aware that someone else is present or who that someone is. Similarly, when the child walks into a room where the specialist has been alone, the specialist should speak or make some noise if nothing more than clearing the throat or moving the feet. One should not sit motionless allowing the child to assume there is no one present, then suddenly discover that someone is there and has been there all along.

12. When the blind child drops something, sufficient time should be allowed for the child to recover the item without assistance. Help might better be given in the form of verbal guidance than in physical acts such as picking the item up and handing it to the child.

13. Bending over is a safety hazard for the blind child, and the specialist should instruct the child in the safety technique of squatting and bending the knees but keeping the back and neck relatively straight with the head erect. Instruction in this technique enables the child to gain access to the item dropped or searched for and yet minimize the chances of bumping the face or head on chair arms or table tops or other obstacles as would be likely if the child bent forward and downward.

14. When handing something, such as a book, plate or box, to a blind child, the specialist should touch the child's hand with the object so that the child knows its location. It is very frustrating and embarrassing for the blind child to be forced to grope (especially when the teacher may also be in the process of groping) to locate that which is being proffered.

15. In class discussion and participation, the specialist should use the child's name when asking a question or when responding to the child's request. Unless the name is called, the blind child cannot be certain who the teacher is responding to or giving permission to speak. For a seeing child, one might nod and this would be cue enough, but it is good practice to use each child's name when a specific response to that child is made.

16. If the children are expected to raise their hands to gain recognition, the child who is blind will have to be taught to do this. Unless specifically instructed, the blind child will tend to call out without first receiving permission and is unaware of the hand raising procedure, being unable to see other children raising their hands.

17. If in using pictures, maps, drawings, and other visual aids, it is necessary to describe the material for the sake of the blind child, the specialist should proceed in a matter-of-fact way, as if describing for the whole class. Isolating the blind child with a specific reference contributes needlessly to self-consciousness and unduly emphasizes differences between that child and the group. A good description will benefit even a seeing youngster.

18. When using the chalkboard, the teacher should remember to say the words while writing them. Of course, there are occasions when it is imperative for the children rather than the teacher to pronounce. In most instances, however, the teacher's saying what is being written does not detract from the lesson. On the contrary, this additional explanation often further strengthens the learning; the seeing children are both seeing and hearing the words and the blind child is being kept abreast of activities and is not left out.

19. The teacher should allow the visually impaired child to use residual vision in whatever capacity would seem helpful. Unless the opthalmologist has specifically prohibited the use of the child's eyes, no harm can be done by employing vision. When reading braille, of course, the child should be reading with the fingers, not the eyes and must be carefully taught not to depend vaguely on the eyes, thus weakening concentration on finger perception. The child may need to bring the picture close to the face or take it to a stronger source of light, such as near the window. Therefore, something that the teacher holds up and a normally seeing child can see even from the rear of the room, the visually limited child may need to have in hand to scrutinize. Concepts gained through vision, though limited, are very likely to serve the blind child well. Needless to say, this suggestion is an avenue for learning that is useless to the totally blind child.

20. When referring to an object (such as the red book on the shelf) or a certain spot on the map or an equation or word on the chalkboard, the teacher should name the item rather than saying, "this," "that," or "here," "there." Such designations are meaningless phrases to the blind child who is listening and trying to follow the discussion. Though it may be obvious to seeing children when the teacher points and says, "here." the action is not only useless but can be confusing to the blind child.

21. If possible, the teacher should avoid moving the child's personal belongings such as books, braille writer, recordings, and lunch box. Even though one may have moved an item only a short distance, the blind child may not be able to find it without help. When a seeing child's property has been moved by another person, that child can glance around and probably relocate the item. For the blind child, an item a foot away is "lost."

22. Because of the preceding fact, the teacher should encourage the blind child to be systematic, orderly, consistent, and methodical in the use and storage of personal equipment. As suggested earlier, the child can find a given item much more easily if it has a specific place when not in use.

23. When assigning a task to a blind pupil, the specialist should be sure that it is one within the child's ability to execute. Only then is it appropriate to expect the child to assume the assigned responsibility.

24. When a reasonable assignment is posed, the teacher should remain firm in the expectation that the child will perform the task. Allowing the child "to get away with it," encourages irresponsibility and apartness from the group and undermines the teacher's status not only with the blind child but with the seeing children.

25. The specialist should regard the blind child as a sturdy, healthy youngster, not a sick, fragile china doll. Thus, the teacher should allow the child freedom of movement and activity appropriate to the peer group and to safety precautions relative to the child's degree of impairment. Over-protection of the blind child from physical bumps and bruises may result in the more serious consequence of personality and psychological crippling.

26. The teacher should be firm and fair in discipline, equally with the blind child as with the seeing child. The blind child especially needs to learn social limits. If other children are not allowed to hum or whistle at a specific time, the blind child must not be allowed to do so either.

27. The teacher should praise the blind child for a job well done, but avoid praising a slovenly piece of work "just because the child is blind." A blind child is likely to disregard standards if not held accountable for them.

As has been stated, the preceding is not a comprehensive list. After reading these suggestions, a teacher's reaction may be, "I've made mistakes," or "What will happen if I make a mistake?" Basic to success in dealing with the blind child is the teacher's attitude toward the child. If the attitude is warm, accepting and genuine, the child will sense the attitude and not be damaged by the "mistake." If the teacher's attitude is negative, the child is already damaged, and even the techniques executed correctly will fall short of expectations. Attitudes are much more important than methodology.

COMMUNICATION SKILLS

by
Grace D. Napier

Communication skills are of two types, verbal and nonverbal. The verbal communication skills are often divided into encoding and decoding. Encoding involves the sending out of a verbal message via speaking and writing. Decoding is the receiving of a message via the auditory channel or reading. Too often, teachers and school programs disproportionately engaged in verbal communication skills almost to the exclusion of the nonverbal. Nonverbal communication includes eye contact, seeing and using facial expressions, hand gestures or body poses, reaching out or touching to convey sympathy, understanding, affection, good humor, encouragement, etc. The visually impaired individual has diffficulty in receiving nonverbal messages. Such a person sees too poorly to notice another person's behavior from a distance. A nod, smile, frown, grin, or shrug is lost for the totally blind and frequently lost for the visually impaired individual. A seeing person, noticing another's slumped shoulders or tear-swollen eyes, might politely withdraw or express care; the visually impaired person might impolitely remain, or fail to extend appropriate sympathy. One who cannot read nonverbal cues can hardly be expected to react to such cues.

The congenitally impaired, never having fully seen human gestures, especially is less likely to adopt appropriate nonverbal gestures of communication. Most nonverbal gestures for seeing children are learned from older siblings, playmates, and from parents and other adults. Without nonverbal behaviors, the visually impaired person may be expressionless, may not gesticulate with the hands, may be hard to read relative to a mood or a specific reaction. Teachers and parents have the responsibility of encouraging the blind child to adopt seeing persons' normal indices.

Although the blind pupil can be the recipient of a pat on the arm, a warm embrace, or the friendly arm around the waist, such an individual is less skillful, less casual, and less nonchalant in initiating these behaviors toward someone else. If the blind child reaches out to pat someone's arm, there is the risk of knocking the cigarette out of the other person's hand or upsetting a cup of coffee between the two. The blind person might miss the mark, patting the air or poking the other person in the ribs or in the breast. These faux pas may be misconstrued as uncouth overtures.

Because visually impaired or blind students do not "read" smiles or the twinkle in the eye, the teacher must employ bodily contacts which express these values, which act as substitutes for the smile or twinkle. Touching the student is a way of communicating the ideas: "I am listening," "Continue," "I agree," "I'm concerned about you," "I am interested in you." Similarly, as the teacher and child talk, the teacher's gestures can be punctuated with verbal assurances such as "Uhuh," "Oh," "Yes," "Really?" These relay the message that the teacher is listening, paying attention, isn't bored. Also, as the blind student learns to face the person being spoken to, the teacher's utterances supply a target toward which to look.

Even though speaking and listening for the visually impaired child are "normal," greater differences are seen in the areas of reading and writing. Because there is a visual problem, the child's methods of reading and writing may differ from those of seeing individuals.

Consider the various modes which may be utilized in reading and writing.

Reading

Reading, as a process, occurs in the brain. Because reading is a mental operation, the eyes serve as a gateway to the mind, but only as one kind of gateway. If the eyes serve as a channel, so then can the ears and the fingertips. Thus, in the education of visually impaired children, one regards the eyes, ears, and fingertips as channels to the brain or avenues of reading.

The Eyes

For some visually impaired individuals, the eyes are used in reading, with certain modifications being necessary: using larger than normal size print, holding the reading material closer to the eyes, using magnification lenses, controlling the illumination, providing strong color contrast between symbols and the background whether on paper or on the chalkboard, utilizing formats that allow generous spacing between letters, between words, and between lines, and using glare-free surfaces. Although the youngster may be able to read print those conditions, the rate of reading may be quite slow. When this is true, the student may need another avenue of reading to replace or supplement the eye gate. Two other avenues are the ears and/or the fingertips.

The Ears

When visually impaired children are notably slow in reading a visual book, the auditory or the tactile book should be used. If print can be read at all, the auditory book may be regarded as a second channel for reading. Auditory books may be on discs, open-reel tape, cassette tape, or may be read directly by a human reader. Material must be covered at a mutually convenient time when a reader is used. The use of the mechanical equipment allows the student to read when desired.

Frequently, visually impaired persons cannot achieve visual reading speeds which equal those rates at which auditory reading is possible.

If vision does not permit the reading of print at all or at so slow a rate as to prevent print from being a chief mode of reading, the student, may use the tactile book or brailled material.

The Fingertips

Fingertips (the tactile sense organs) are employed in the reading of braille symbols. Braille is a system using a maximum number of six dots arranged thus: ●● ●● ●● or in different combinations to make letters and other symbols. The alphabet is shown below:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
●○	●○	●●	●●	●○	●●	●●	●○	○●	○●	●○	●○	●●	●●	●○	●●
○○	●○	○○	○●	○●	●○	●●	●●	●○	●●	○○	●○	○○	○●	○●	●○
○○	○○	○○	○○	○○	○○	○○	○○	○○	○○	●○	●○	●○	●○	●○	●○

Q	R	S	T	U	V	W	X	Y	Z
●●	●○	○●	○●	●○	●○	○●	●●	●●	●○
●●	●●	●○	●●	○○	●○	●●	○○	○●	○●
●○	●○	●○	●○	●●	●●	○●	●●	●●	●●

In the braille system, one cannot make small letters and big letters. All are the same size vertically. However, capitals can be designated by adding a dot before the letter as illustrated below:

----A	----B	----C	----D	----E	----F	----G	----H
○○ ●○	○○ ●○	○○ ●●	○○ ●●	○○ ●○	○○ ●●	○○ ●●	○○ ●○
○○ ○○	○○ ●○	○○ ○○	○○ ○●	○○ ○●	○○ ●○	○○ ●●	○○ ●●
○● ○○	○● ○○	○● ○○	○● ○○	○● ○○	○● ○○	○● ○○	○● ○○

The individual dots that comprise the cluster of six have been designated by numerals to indicate exact placement. They are:

1 ○○ 4
2 ○○ 5
3 ○○ 6

One way in which the braille system is different from print is in its use of contractions. Braille contractions are symbols that can be roughly likened to shorthand signs. A symbol which may or may not be a letter represents a group of letters or even an entire word. A few examples below illustrate how letters and other symbols are combined. The "contraction" part is enclosed in parentheses in print for understanding here, though parentheses are not used in the braille form:

h(er)	(gd) good	(ag)(st) against
f(in)d	(alm) almost	c(ar)e(ful)
(work)(ed)	help (ing)	mo(ment)(ou)s

Actually, almost 200 of these contractions are used in the system. Even in preprimers, contractions are used, although certainly not the entire set, because many, such as *perceiving, declaring, knowledge, rather*, are not within the primary child's reading vocabulary.

Because of the peculiar nature of the braille system, many letters are not identifiable by the young child who has not yet mastered contractions and the letter combinations which they represent. This must not be construed to mean that words in braille are not spelled correctly. Spelling is exactly the same as in print. However, just as the preprimer-reading

child probably cannot name every letter in the just so the braille reading child may not be able to name the letters for which a contraction stands. Only with more experience can the braille reading child begin to do this. Although most of the methods in the teaching of reading are appropriate, some modifications are necessary because of the uniqueness of braille. As an illustration, the word *round* is written *r*[*ound*]. This being so, there may be no response to, "What are the vowels in that word?" if it is not yet known that the sign after r means *ound*. Consequently, the extra reading help required by the braille student needs to be provided by the resource or itinerant teacher.

In summary, reading can be accomplished as a mental process by means of print, auditory, and tactile materials. Each has its advantages and disadvantages.

Writing

Writing for visually impaired children takes three basic forms, as does reading: visual, auditory, and tactile. A given child may, in fact, use all aspects of the three modes. Some students, on the other hand, may employ only specific ones but not all. Consider the ramifications inherent in each modality as an avenue for writing:

Visual Writing

Under the label of visual writing, one might include anything from pencil writing by a pupil with very useful vision to typewriting by the totally blind student. The rationale is that someone reads it visually even if the blind child does not. Many visually impaired students utilize pencils, pens, chalk, crayons, and magic markers much as do normally seeing children. However the combination of large symbols (letters and numerals) and thick, dark lines making the symbols helps to promote visibility and readability.

The visually impaired student usually benefits from using specially adapted paper which can be purchased (American Printing House for the Blind) or the teacher can adapt the paper on hand by drawing heavy lines on alternate lines. The dark line then serves as the base line on which to place the symbol, while the faint line indicates the midpoint in the vertical direction.

Frequently much can be accomplished by working at the chalkboard. The student can see what the teacher writes and/or demonstrate to the teacher skills acquired in penmanship, spelling, arithmetic, etc. In determining if material written on the board can be read, "Can you see the board?" answered affirmatively may mean just that. Rather, the student should be asked to read the first word or the third arithmetic example. The teacher's placing a hand on the board assists in focusing on the right area. Those who hesitate should be encouraged to move toward the board until close enough to read it. This reveals the student's general reading distance.

When chalkboard material cannot be read from the student's seat, some alternatives are open to the teacher. One is to supply a desk copy of whatever will be written on the board. This can easily be a teacher-prepared copy on paper that the student uses at the desk.

When duplicated material is distributed to the class in general, the visually impaired student should receive a clear, dark copy. If the teacher writes on the student's paper (for instance, to correct the formation of a specific letter or to correctly spell a word), use of the deep marking pencil or pen will make the teacher's writing more easily seen.

Factors that apply to the reading environment — color contrast, adequate spacing, controlled illumination, etc. — also pertain to the realm of writing. The teacher needs to be aware of the visual climate, how it can be improved, and how to encourage the student to assume some responsibility for this improvement.

As often mentioned, one aspect of the student's learning to cope with the visual environment is that of the teacher's attitude of permissiveness and acceptance. Such behavior as turning a chair to take best advantage of illumination conditions and walking to the board to copy something, even while the teacher is talking must be acceptable to the teacher. Assurance that such behavior will not be interpreted as restlessness, inattention, or rudeness is important.

In arithmetic and other areas the visually impaired student may have difficulty copying a lesson from a book. The problem is locating the place in the book and on the writing paper and focusing well enough to read correctly. The teacher's copying the material from the book to the paper enables the student to work on the paper only and reduces the danger of miscopying and arriving at incorrect results.

Another visual approach to writing is touch typewriting. It serves both the student who does little or no writing with a pencil and the student who functions well with pencils. For the former, typewriting provides a means by which normally seeing students can read what has been written, while for the latter it provides a means that is more legible than student handwriting is likely to be. Typewriting lessons are often introduced by the fourth grade. When the student enters junior high school, the acquired typewriting skill should be adequate for homework assignments and test situations.

Operating the typewriter is not radically different for the visually impaired child. However, those who cannot read print cannot read their own typewritten work. Neither can they re-insert paper to the exact place in proper alignment for continuing work. If working from a braille book, they must take the hands off the keyboard, reach over to the book and read, and return the hands to the keyboard. If working from a print book, they need a bookrack to prop the book to eliminate having to lean so far down to read.

When the special teacher indicates that the student is ready to do specific lessons on the typewriter, it is time to arrive at an understanding with the regular teacher about accountability for errors. Standards set for other students must apply to the special student who types a lesson. If, because of wrong fingerings or carelessness, the student writes *Cilumbus* for *Columbus,* and this is normally viewed as a spelling error, the student should not be excused by having it called a "typing error." To do so only encourages poor performance in the future. On the other hand, penalized once, the visually impaired student is likely to try to be more careful and precise the next time — exactly the goal set by the teacher.

Achieving an adequate margin at the top of the page is easy to accomplish by counting the number of lines down from the top edge of the paper. The left and right margins can be constant once the margins have been set on the machine and if the student aligns the left or right edge of the paper with something constant on the machine. However, the bottom margin can be troublesome. Using a backing sheet that has been adapted can solve the problem. This backing sheet extends to the left or right of the page being typed on. At the desired distance from the bottom, the backing sheet has a line of braille dots or a heavy ink line.

A blind student is confronted with another type of problem in typing; namely knowing when the ribbon is functioning normally or when a new ribbon is required. Too often, a blind typist works diligently producing several pages only to learn from someone later that the pages are blank! To avoid total disaster, the blind student does well to use carbon paper. Then if the ribbon fails, a legible copy is still available.

Learning to sign one's name or to write other ink-print symbols without the assistance of vision is a difficult but rewarding accomplishment for the totally blind. The task is done through muscle memory and with the assistance of a device that serves as a guide to keep on the line. A tactual model must be large enough for the various intricacies in its formation to be felt. The Raised Line Drawing Kit is a device that employs polyester film sheets placed on a rubber mat. Another technique for making a model is that of forming the letters with string shaped into the letters and fastened down to stay in place. This is placed under a sheet of Brailon and reproduced in the American Thermoform Duplicator with heat and pressure applied. The Brailon sheet then has an almost indestructible model of the name for a blind individual to examine and trace with the fingers.

Initially, blind children will write too large; later, hopefully, they will reduce the size to keep it within acceptable limits. Because they cannot see their own work, they require verbal feedback from the teacher who makes such evaluative remarks as: "Your name ended uphill from where you began;" "You are making the capital D too tall;" "You are putting the dot to the left of the i instead of over it." With this kind of feedback, blind students can attempt to modify subsequent performances. A reasonable goal to set in the early months of learning handwriting is the initial of the first name and the whole last name. The objective is to provide a functional and socially acceptable skill.

If blind students progress well in signing their names, they might be interested in learning additional symbols. The teacher might do well to begin on a small scale by looking for symbols that will be the most functional for blind students. Particularly useful for taking tests are: THE NUMERALS, +, -, T, F, Y, N. Once these have been mastered, blind students can often do an objective-type test simultaneously with sighted peers, if provided with raised line stationery or graph paper, showing lines or boxes in which to write.

Manuscript letters need to be shown to the blind student, especially those that are referred to in conversation or literature. For example, "an L-shaped room," "a U-turn," "a V-neck dress," "a T-bone steak," "an A-frame house," "write an X in the box," etc. Blind students are likely to miss the concept intended if they do not see the difference between the braille letter and the print letter.

Auditory Writing

The process of writing in auditory form has several applications if appropriate equipment is accessible to the student. Enrolled in junior or senior high school and faced with preparing a formal paper, for example, the student might "write" initially on magnetic tape (reel-to-reel or cassette) by dictating to a microphone. This technique is more effectively used if two machines are available. The original material is dictated into Machine A. It is then played for the purpose of correction and refinement. The student listens to Machine A and dictates again, this time into Machine B. This operation can be repeated until the results are satisfactory. A foot-control pedal on the recorder facilitates the student's typing the final

copy by taking dictation from the machine. With the foot pedal the student need not remove hands from the typewriter keyboard in order to stop and start the recorder.

A student who has not mastered typewriting might possibly submit the finished paper on tape. For evaluating form and organization, new paragraphs and placement of headings such as center of line or beginning of paragraph can be indicated in the student's dictation. To check spelling, the teacher could make a list of words used by the student in the dictation and later ask the student to spell them in an oral conference.

Auditory writing with a card reader (Language Master or EFI Card Reader) allows the teacher to record material and permits the recording of answers to be checked. This process lends itself to independent seatwork.

Auditory writing can be used by the visually impaired student for taking notes when fully sighted students are expected to write notes on a lecture, discussion, demonstration, or film. However, excessive use of the recorder for verbatim transcriptions should be discouraged. The problem of excessive use is twofold: 1) The student is likely to develop inefficient listening habits "because the machine gets the information;" the student sits there but is not attending to the topic at hand; 2) Not all that transpires in the classroom is truly worth recording. The teacher can utilize a tape recorder for "writing" to the student. Tests, directions for study, and assignment can readily and effectively be taped.

Using the tape recorder in correspondence with a friend or relative should be encouraged. This kind of letter is enjoyable since one hears the "writer's" voice. For the visually impaired individual, the taped letter offers privacy and confidentiality since no reader is required. And the sender does not have to be concerned that a stranger will read comments intended only for the addressee.

Tactual Writing

Various forms of tactual writing are used, depending on the amount of vision the student has and the task required. The most obvious tactual system is braille. Generally, if braille is used for reading, it is used for writing. There are two methods of writing braille.

1. **Braillewriter —** is a machine with keys to operate with the fingers. Because the braille system has a maximum of six dots in a given cell, the machine has six keys for making dots. If a specific letter has four dots, four corresponding keys are depressed simultaneously to make that letter. Hopefully, braille writing is begun on a machine which is less demanding of small muscle coordination than is the use of the slate and stylus.

2. **Slate and Stylus —** The slate is a set of two bars hinged at one end. Most slates have four rows, while some have six. The paper lies between the two bars. Between the bars is a pin at each corner on which to mount and secure the paper. When all rows have been used, the paper is moved up so that the next lines fall into place. The upper bar has open cells while the lower bar has groups of six depressions. The stylus is similar to an awl on a small scale. The metal shaft is mounted in a handle. When writing, the student holds the stylus in the right hand with the point inserted in a cell. Of the six positions in the cell, the student must select precisely the placement of the dots desired. The stylus point is pressed downward into the paper, coming to rest in the lower bar in a corresponding depression. To assist the right hand, the left index finger precedes the stylus point, locating the position of the next dot. Because the stylus is pushed downward, the dots appear on the under side of the paper. Therefore, when using slate and stylus, the writer must begin at the right hand end of the slate and proceed to the left. Contrary to the impression, the words are not imprinted backward. Each symbol is a mirror image of its impression. Slates are available in a variety of sizes, though the cell is standard in size. The number of cells per line ranges from 19 to 40, governed by the size of paper being used.

An additional type of tactual writing is found in a variety of arithmetic slates for computational purposes. However, only the Cubarithm enjoys continued use. This slate's upper surface is a series of square recesses arranged in rows and columns. In computation, cubes are dropped into the recesses. The cube has a different numeral on each facet. Six facets represent ten digits on the cubes. Turning from the vertical to the horizontal creates a different numeral. The Cubarithm is most often used by young children for simple addition or subtraction computation. The placement of the numerals in the computation process is according to paper-and-pencil format.

Generally, the braillewriter is preferred for mathematical computation. Certain disadvantages associated with the Cubarithm limit its usefulness. The cubes turn easily in the holes, making different numerals without the student's being aware that changes have occurred. The Cubarithm is not carried safely except when empty and if the cubes are spilled a problem in retrieval is created. Lastly, Cubarithm computation cannot be submitted to a teacher as can computation on paper.

The Cranmer Abacus, an ancient device for calculation purposes, now modified for touch use by the visually impaired, is gaining in popularity and acceptance. This aid is small, inexpensive, and has no detached parts to become

lost. Each of the thirteen vertical wires represents a column or place holder in computation, with digits at the extreme right, tens to the left of digits, and hundreds to the left of tens, etc. A horizontal bar separates one bead above from four beads below. The bead above the bar signifies *five*, while each of the beads below symbolizes *one*. When the upper bead is pushed up and lower beads pushed down, the column is considered blank or *zero*. As a bead is pushed toward the separation bar, it takes on numeric value. For instance, if the upper bead is pushed down and all four lower beads are pushed up, the value in that column is nine, derived by thinking 5 plus 1, plus 1, plus 1, plus 1 (equals 9).

Inherent in the abacus is one limitation found in the Cubarithm. If ten problems are assigned, only ten answers can be given the teacher for examination. Therefore, if a new process is being learned or if too many errors are being made braillewritten computation is preferred. Solutions can be checked, misconcepts located, and remediation provided in this way.

For geometry the Raised Line Drawing Kit (Sewall) is useful in drawing appropriate figures, with the assistance of the modified ruler, compass, and protractor. With this procedure the teacher can evaluate the student's comprehension of the principle or concept demonstrated.

Embossed graph paper enables the blind student to construct a graph consistent with demands of the lesson. The graph paper can be mounted on a soft, porous board with map pins and rubber bands used to represent lines. A less home-made approach is the Graphic Aid for Mathematics, a graph board that has a rubberized surface with an embossed grid. This kit comes supplied with pins, metal strips, and elastic bands.

AUDIO READING: AN EFFECTIVE ALTERNATIVE

by
Dean W. Tuttle

Limited quantities of braille and large print materials make reading by listening a primary source of information for the visually impaired. The more advanced the student is, the greater is the reliance on audio reading.

Audio reading is not a new concept. The Library of Congress has been producing "talking books" for more than forty years. Mr. Robert Bray, former chief of the Division for the Blind and Physically Handicapped of the Library of Congress, observed that (1) listening is a method of reading, and (2) large progressive libraries are making more books in cassette form. (Abel, 1973, p. 29)

However, audio reading as an alternative to print or braille has never been systematized and taught as a reading process. Furthermore, this alternative of audio reading is not the exclusive right of the visually impaired. In 1958, Early recommended that listening be taught to sighted students as a substitute for reading since research findings indicated that poor readers were frequently better listeners. (Duke, 1971, p. 34)

Skeptics argue that there is a dangerous trend toward short cuts in education and audio reading is a short cut. Teaching the reading of braille or print takes more time than teaching the use of listening equipment is the accusation. First, audio reading is more than operating equipment. Second, there are and will continue to be needs which require braille or print. Consequently, even the skeptic can agree that audio reading is to supplement, not supplant, other reading modalities.

Preliminary Observations on Listening

I. The Importance of Listening

One of the characteristics of human beings is the ability to use symbolic language. In 1930, Rankin felt that seventy percent of the average adult's waking hours is spent in verbal communication, either listening, speaking, reading, or writing. (Rankin, 1930) More recently, advances in audio technology have served to increase the availability of aural stimuli.

Listening has been recognized as the primary mode of learning throughout life, both in and out of the classroom. James Brown estimates that 75 percent of what one learns as an adult, one learns from listening. (Brown, 1950) Furthermore, listening is used more frequently than any other form of communication. Forty-five percent of the average adult's communication time is spent in listening, 30 percent in speaking, 16 percent in reading, and 9 percent in writing. (Rankin, 1930) To put it another way, Markgraf found that high school students are expected to learn by listening 53 percent of the classroom time. (Duker, 1966, p. 93)

Though listening may be an effective learning tool, without training it is not very efficient. Research has demonstrated that people comprehend only 50 percent of what they hear. Two months later, they remember only 25 percent of the original message — a 25 percent level of efficiency. (Nichols and Stevens, 1957)

If listening is effective despite present inefficiencies, any training to increase efficiency would increase effectiveness. Efficient listening requires physical, mental, and emotional involvement. The development of efficient listening requires discipline, effort, and practice. For training purposes, specific objectives and related variables can be organized into sequential instructional units. Many authors agree that efficient listening can and must be taught.

II. Listening Situations

Listening can occur at any time and any place. The demand placed on the listener varies with each situation. These demands or expectations vary with the listener's background, attitudes, motives, and abilities. Before analyzing the complexities of these demands, it would be wise to briefly outline some potential listening situations.

1. **Nonverbal environmental sounds** of home or yard, city or farm, street or highway, mountain or ocean (**Receptive** only)
2. **Informal monologue** as in receiving directions and instructions, explanations, descriptions, corrections, or reproofs (Primarily **receptive**)
3. **Informal conversation** over the telephone, at the dinner table, parties, coffees (**Two-way** communication)

4. **Mass media,** theatre, and concert hall as in radio and televison, movies, plays, vocal and instrumental concerts. (Primarily **receptive**)
5. **Formal presentations** as in lectures, sermons, speeches (Primarily **receptive**)
6. **Formal group interactions** as in seminars, debates, class discussions, think-tanks (**Two-way** communication)
7. **Packaged programmed instruction** as in slide-tape presentations, educational films, auto-tutorial programs (Primarily **receptive**)
8. **Audio reading** as in talking books, cassette books, recorded references (**Receptive** only)

III. Listening Expectations

The listening situations discussed above do determine, to a certain extent, a range of possible reactions. To an even greater degree, listening outcomes are determined by the listener's expectations. Most people strive for better control over themselves and the listening situation. Listening provides data necessary to appropriately modify one's behavior, to have better control over one's environment. High expectations yield greater results in growth and maturity. The following are but a few of the realistic demands that can be placed on the listening experience. Just as with other reading modalities, the listener can expect:

1. **To grow mentally**
   a) to recognize danger
   b) to gather information, either main ideas or details
   c) to expand knowledge
   d) to develop language facilities
   e) to evaluate and make judgments
   f) to form opinions
   g) to make decisions and reach conclusions
   h) to expand interests

2. **To grow socially**
   a) to shift from self-centeredness to interest in others
   b) to improve self-awareness, self-concepts, and self-confidence
   c) to be courteous
   d) to react appropriately in social situations
   e) to improve ability to converse and discuss
   f) to be perceptive

3. **To grow emotionally**
   a) to enjoy and increase enjoyment
   b) to appreciate
   c) to relax or decrease tension
   d) to be aware of emotional responses
   e) to control emotional responses
   f) to empathize or sympathize
   g) to receive inspiration

IV. Listening Levels

Listening has been examined from many perspectives. New insights are gained with each added dimension. Although the following are presented as polar, in reality the listener will move to different levels on the continuum between extremes, depending on each listening situation. Listening can be:

1. **Physiological-neurological:** hearing sounds vs. listening for their meaning
2. **Verbal-nonverbal:** words vs. sounds
3. **Shared-unshared:** listening with someone else vs. alone
4. **Individual-group:** communication with one other individual vs. listening in a large group
5. **Monologue-dialogue:** listening to someone vs. communicating with someone
6. **Active-passive:** involved and reactive vs. lethargic and apathetic
7. **Easy-difficult:** social chit-chat vs. technical and critical material
8. **Utilitarian-recreational:** listening for some other purpose vs. listening for the enjoyment of listening
9. **Cognitive-affective:** intellectual vs. emotional
10. **Conscious-unconscious:** sounds consciously listened to vs. sounds unconsciously listened to which may later affect the listener

Every listener should seek a personal level on each of the above continua where s(he) can best function for a given task. Flexibility to shift comfortably and effectively in response to a variety of listening demands can maximize the learning potential. The level sought has its effect on the listener's mental, social, and emotional growth.

Listening levels can also be perceived as hierarchical skills. Though each level is somewhat dependent on the successful completion of the previous level, yet the degree of attainment of any level can vary widely. Furthermore, the degree of attainment possible at any level is determined by the degree attained at the previous level. A hierarchy of levels toward effective and efficient listening include:

1. **Attention:** awareness of the sounds in one's environment
2. **Selection:** focus on the desired sound while ignoring others
3. **Comprehension:** can vary from an acknowledgement of the literal bare facts to the interpretation of their meaning
4. **Retention:** ability to recall facts and ideas
5. **Evaluation:** critical analysis of the data for misinformation, omissions distortions, etc., in the light of previous experiences and other known facts to determine extent of agreement
6. **Assimilation or rejection:** absorbtion or partial absorbtion of the new data into one's cognitive and affective framework or rejection of the new data. Rejection can occur by default if any of the previous levels do not function effectively.

Audio Reading Readiness

I. General Information

Children acquire many listening habits long before they arrive in school. It doesn't take long to determine whether a child's listening behavior is compliant or questioning, intermittent or attentive, responsive immediately or responsive only after many repetitions. Children will manifest wide differences in auditory acuity, auditory discrimination, and auditory comprehension abilities.

Listening skills are semisequential and overlapping. There are some skills which are prerequisites for other skills. However, this is not to suggest that, in the following outline, one should complete instructions in auditory vocabulary before beginning instruction in auditory language. Students will want to return to the earlier skills to deepen and sharpen them. Consequently listening instruction can be perceived as cyclical or spiral, periodically returning to previous skills only at another level. For example, the rudiment of the evaluation and assimilation process of listening can be introduced as early as the kindergarten level.

One of the first tasks for the teacher who wishes to begin instruction in listening is to assess the child's level of functioning not by age, but by performance. Assessment can be accomplished through formal tests or informal observations. Having determined weak areas or a base line, teachers can then proceed with the development of appropriate instructional units.

Instructional units must allow for three components of the listening activity: presentation of the stimulus, managing or mediating the stimulus, and reacting to the stimulus. The better children understand the purpose for the listening activity,

the more appropriate will be their reactions or responses. Children need to know what is expected of them and how to tell when they have reached their objective.

Physical, mental, social, and emotional factors all contribute to the listening climate. Fatigue, preoccupation, or frustration have negative effects on the listener. The threat of punishment, perceived or real, inhibits listening. Another inhibitor is the overloading of the auditory system. Aural activities must be properly balanced with non-aural activities.

The suggested objectives and activities outlined below are representative of a wide range of potential objectives and activities. References at the conclusion of this chapter offer more complete lists of suggestions for the classroom teacher. In addition, selective and purposeful use of available commercial listening materials also listed at the conclusion of this chapter will offer variety and depth to the listening program.

II. Auditory Discrimination Skills

The ability to discriminate sounds, tones, inflections, etc., is the cornerstone to language comprehension and effective communication.

1. **Identifying non-verbal sounds**
   a) identifying clock ticking, car going by, steps in the hall, dog barking, and thunder
   b) identify and interpret traffic sounds for travel purposes

2. **Reacting to non-verbal sounds**
   a) Give appropriate reactions to sounds, e.g., to a fire bell, a car horn, and a schedule bell

3. **Localizing sound sources**
   a) identify sound source, distance of source and sound direction
   b) point to a bird chirping or a classmate speaking
   c) follow moving sounds like airplanes and footsteps
   d) drop and locate objects

4. **Pitch, tone, volume discrimination**
   a) identify classmates by their voices
   b) identify different kinds of vehicles and animals by their sound
   c) match pitch and/or volume of voice, bells, or piano notes

5. **Hidden sounds: figure-ground**
   a) listen for the distant church bells amid city noises
   b) three children stand in front of the class — all three pupils talk at the same time but say different things — class is to concentrate on what the child who is standing in the middle is saying — no attention is given to the other two (For practice in hearing the middle child's voice, that child repeats the sentence alone.)

6. **Pattern and rhythm of non-verbal sounds**
   a) repeat a drum beat, beginning with simple and advancing to more complex patterns
   b) keep time to music by marching, rhythm instruments or clapping

7. **Identifying sounds within words:** initial letter sounds, recurring consonantal sounds, final and medial sounds
   a) tell which word of the three does not begin like the others, e.g., "run, Tom, red" and "table, time, door"
   b) say whether the words are the same or different, e.g., "bat-back," "bang-bang," "eat-heat," "necks-necks," and "sleep-slip"
   c) identify repeated sound in bubble, cackle, church

8. **Auditory fusion and blending**
   a) listen for a word whose first two letters begin differently from drink: drank, drive, dive, drip

9. **Auditory closure** (non-verbal)
    a) after stopping the pattern midway, students are asked to complete Westminster chimes, a baseball cheer, or the melody of a familiar song

10. **Nonverbal cues of language**
    a) play charades or pantomimes
    b) identify situations where silence can be interpreted as unfriendliness, boredom, disapproval, agreement, warmth

III. Auditory Vocabulary Skills

It has been estimated that children enter school with an auditory vocabulary of several thousand words. Though the word is not the unit of comprehension, its understanding affects the comprehension of the phrases, the sentence, or the paragraph.

1. **Vocabulary development** through first-hand experiences
    a) take field trips to baby zoo, store
    b) play game, "I'm thinking of something." "I am thinking of a word that tells how clothes feel when they come out of the washing machine"(damp); "I am thinking of a word that tells how to get dressed on cold mornings" (quickly).
    c) introduce the unknown to develop curiosity, as in a surprise box

2. **Rhyme, rhythm and alliteration**
    a) stand up if the teacher says words that rhyme, e.g., "hard-lard," or "run-jump." Tell rhyming words in sentences such as, "This seed makes good bird feed. John likes meat to eat."
    b) duplicate teacher's rhythm pattern, e.g., clapping hands, beating drums, or combining two types of rhythms
    c) make up sentences using alliteration

3. **Antonyms, synonyms, and homonyms**
    a) "reach high, reach low"; "clap slowly, clap fast"
    b) in a group of three words, identify the two that have the same meaning, "couch, bed, sofa"; "picture, trip, journey"
    c) identify the words that sound alike in sentences like, "The eight girls were hungry and ate all the cake," and "I knew you wanted a new toy."

4. **The function of words:** naming words, action words, descriptive words
    a) during the telling of a story, act out the action words
    b) attach as many descriptive words as possible to a given noun, e.g., dog — large, noisy, black, curly

5. **Association and analogies**
    a) "What does not belong? Car, truck, bed, wagon."
    b) "How are a horse and cow, hat and coat, candle and flashlight alike? How are they different?"
    c) "Your hand is on the end of your arm; your foot is on the end of your (leg). People walk; fish (swim); We eat on a table; we sleep on a (bed)."

6. **Word analysis:** compound words, roots, prefixes and suffixes
    a) given the word "air," how many compound words can be formed like "airport," "airplane "
    b) identify the root word and prefixes in a sentence like, "The unwanted guest premeditated the discharge of the repossessed furniture "

IV. Auditory Language Skills

Children differ in their abilities to understand auditory language. They begin with the simple and move to the complex: simple nouns, simple subject and predicate, compound subject or predicate, compound sentences, complex sentences.

1. **Following directions**
   a) children give directions to each other to nearest stoplight, the corner mailbox, or their home
   b) teacher gives oral directions for folding a piece of paper, beginning with simple directions such as, "fold in half " (Complexity is increased until pupils can follow directions to make an object such as a a paper bird.)

2. **Descriptions**
   a) teacher describes objects in the room and children guess what the objects are. "Can you guess what I see? It has four legs, a back and a seat. What is it?"
   b) children describe certain tasks, e.g., "How do you wash your hands?" "How do you change a tire?" "How do you play freeze tag?"
   c) insist on verbal responses with no gestures

3. **Sequencing or ordering**
   a) repeat in order the details of a story which the teacher has told
   b) arrange sentence cards to tell a logical story
   c) arrange bells in order of pitch from lowest to highest

4. **Phrasing, inflection and tone**
   a) demonstrate how pausing in wrong places can change meaning of sentence
   b) practice saying single words to express as many different meanings as possible, e.g., yes, please, don't

5. **Grammatical closure**
   a) teacher says slowly, omitting the letters indicated, "I (h)ave (t)en (f)ingers. I (h)ad a (g)ood (dr)eam (l)ast (n)ight." Children identify the incomplete words.
   b) teacher has children complete sentences, e.g., "The coffee is too to drink. The is shining today."

6. **Fact, fancy or fiction**
   a) compare newspaper accounts with fables which are not plausible
   b) compare a biography with a fictional short story
   c) make up stories that are true (fact), untrue and not plausible (fancy), untrue but plausible (fiction)

7. **Appreciation**
   a) give reasons why a radio drama was exciting
   b) discuss the colorful words in a poem
   c) describe the sounds of various musical instruments and their effect on the listener

8. **Interpreting meaning**
   a) notice effect of loaded words, e.g., liberty, mother, sex
   b) illustrate ways in which words can shift in meaning, e.g., grass, gross, neat
   c) listen for changes in feeling and mood in a story

V. Allied Skills

These related skills can be applied to all three previous sections and are prerequisites for audio reading.

1. **Motor development** for handling audio equipment and materials
   a) turn machines on and off and control volume
   b) find the beginning of records and tapes
   c) learn to retrace or skip

2. **Selection**
   a) list distractions, both internal and external, that might occur in a classroom
   b) attempt to listen to a television program and talking book (phonograph) at the same time — note reactions

3. **Attention span**
   a) gradually increase the length of stories told
   b) play games such as "Password," "Twenty Questions," "Who Am I."

4. **Listening with involvement,** active rather than passive listening
   a) children sit with thumbs up and teacher reads sentences. As soon as the children hear a "how sentence," they put their thumbs down. The first child with thumbs down chooses someone to tell the word or phrase that answers the question, "how?" Questions could also revolve around words such as "when," "where," and "who."
   b) the teacher has students listen with the purpose of note taking

5. **Auditory memory**
   a) repeat increasingly longer sentences said by a classmate
   b) play "Restaurant Waiter" — (As a restaurant waiter, remember and repeat all the foods that the classmates have ordered.)
   c) increase the number of steps in a series of directions, e.g., "clap your hands three times, turn around two times, and stamp your left foot four times "

6. **Posture and body language**
   a) examine how the listener's posture affects communication, e.g., erect posture implies alertness
   b) practice being a courteous listener by facing the speaker — (note what happens when the listener faces the opposite direction.)

Audio Reading

I. General Information

The primary focus of this section is the development of the skills required for effective audio reading. Reading can be defined as the recognition, interpretation, and assimilation of the facts and ideas which are represented by symbolic material, be they visual, tactual, or auditory. In other words, reading is a series of word perceptions.

According to Nichols, reading (print) and listening comprehension skills are identical. Russell and Russell have compiled a list of ten similarities between reading and auding.*

II. Audio Reading Comprehension and Critical Thinking

Comprehension and critical thinking are interrelated. Analyzing the evidence or ideas presented and making critical judgments about their validity and quality presupposes an accurate understanding and retention of the author's meaning. Curiosity about the reading material and its author along with background information upon which to base critical evaluations are both necessary for effective critical reading.

The depth of comprehension reflects the types of teacher questions which are used to probe the student's response to his reading. Teachers predominantly ask for recall of main ideas and details. Curiously, these are the only two skills that seem to appear spontaneously and naturally among students. The other skills must be learned through example and practice.

Reading is not a series of isolated skills which, when learned separately, can later be called upon at will. Rather, it is a total process involving a variety of skills simultaneously for gathering new ideas and combining them with old ones.

The following list will serve as a guide to the wide range of skills needed and potential questions asked by the audio reader. Rather than drilling on each skill one at a time, the student should approach the reading exercise realistically by involving a variety of skills and questions simultaneously. It must be remembered that these skills are also semisequential or spiral in nature. Each subsequent return to a skill may be at a more difficult level.

No activities have been suggested for each skill as they all pertain to audio reading. Heavy emphasis can be given to comprehension and critical thinking skills at the intermediate grades and above, though elements of this instruction should begin much earlier. A variety of reading materials will diversify the combinations of skills utilized.

III. Suggested Objectives for Audio Reading

1. **Search for information** through audio reading
   a) identifying stated main ideas: recognizing summary statements
   b) identifying details
   c) inferring main idea from specifics
   d) classifying information into major and minor divisions

2. **Sequence of information** from audio reading
   a) restating sequence of ideas
   b) predicting sequence of thought and events
   c) identifying sequence ambiguity
   d) recognizing relationships among ideas within the material
   e) identifying cause and effect

3. **Source** of audio information
   a) identifying author's mood: fact or fancy, literal or figurative, humorous or serious, emotional or factual
   b) identifying elements of style: prose vs. poetry, description vs. action, simple vs. complex
   c) inferring author's purpose: to inform, to entertain, to persuade, to expose, etc.
   d) detecting author's biases and prejudices
   e) judging persuasion: emotional appeal, scare tactics, threats, logical and factual
   f) recognizing propaganda devices: testimonials, repetition, one-sided presentation, bandwagon

4. **Interpretation** of audio information
   a) evaluation of author's meaning: figurative, ideomatic, symbolic language
   b) interpreting ideas implied, not stated
   c) inferring connotative word meanings of new words from context clues

5. **Reliability** of audio information
   a) determining basis of author's evidence
   b) examining facts in the light of known principles and facts
   c) distinguishing fact from opinion
   d) judging logical validity (Does one idea logically lead to the next?)
   e) detecting misinformation (distortions, omissions) and faulty concepts

6. **Related information**
   a) recalling related information appropriately and accurately
   b) perceiving analogous situations and ideas
   c) perceiving relationships and making associations with prior information
   d) comparing and contrasting evidence from many sources

7. **Conclusions** from audio information
   a) retaining both old and new information
   b) recognizing relevant and irrelevant material
   c) accepting or rejecting, agreeing or disagreeing
   d) drawing conclusions
   e) deferring judgment on inadequate evidence

8. **Assimilation** of audio information
   a) creatively recognizing new relationships or new syntheses
   b) generalizing
   c) applying ideas acquired for personal use
   d) incorporating new ideas into beliefs, attitudes, opinions, feelings, and concepts

IV. Some Suggestions for the Audio Reader

Those who study with audio materials may find the following suggestions helpful.

1. Factors related to the reader
   a) Be **mentally and physically prepared.** Get plenty of rest, well-balanced with good physical exercise Familiarize yourself as much as possible with the topic in advance.
   b) Be **attentive;** concentrate all your physical and mental energies on the audio reading task through interaction and involvement with the material.
   c) Clear your mind of **distracting** preoccupations or worries.
   d) Be **purposeful;** determine your own motives and expectations for the reading; consider the value of the reading to you personally.
   e) **Pause periodically** during the audio reading to give an opportunity for summation, restatement, reaction, and reflection.
   f) Be **inquisitive** about the material and its author; formulate questions before, during, and after the reading to increase interaction and involvement with the material.
   g) Be **open-minded;** be aware of your own biases and prejudices and hold them in check.
   h) Be conscious of and compensate for **emotionally laden words** and ideas which detract from the task at hand.

2. Factors related to the reading content
   a) **Preview** the material before reading to determine content, scope, and purpose. Tables of content, forewords, chapter summaries provide clues. The audio reader whose materials provide no clues may require brief assistance from a sighted reader with the print book.
   b) Don't focus only on facts, look for **central ideas.**
   c) Avoid the single track reading style, approaching all audio reading tasks in the same way; **be flexible;** let your purpose dictate your reading style and approach.
   d) Recognize the **unique demands** of each content field; be conscious of the vocabulary, the organization and the types of reasoning peculiar to each subject area.
   e) When appropriate, take **notes** in some form that will be useable. Restatements of the author's ideas or outlines are beneficial.
   f) Practice reading **more difficult material** than normal to expand comprehension and audio reasoning capacities.

3. Factors related to the audio aspect of audio reading
   a) Control **environmental distractions.** Earphones reduce the effects of unwanted noises, and prevent the audio materials from distracting others.
   b) Be prepared to handle longer and more **complex sentences.** Written material which is later recorded for audio readers contains longer and more complex sentences than those normally used in spoken communication.
   c) When possible, **vary the rate** of audio reading to suit your purpose. Rate adjustments for skimming, scanning, or detailed study are possible through the fast forward, rewind, and APH adapted variable speed control. Compressed speech offers another alternative for rate controlled audio reading.
   d) Utilize the thought-spoken **work rate differential.** You can think faster than the rate at which words can be read aloud. To keep your mind from wandering, try anticipating the author, making associations with past experiences, reviewing previous points, searching for deeper meanings, while listening to the audio materials.
   e) Don't let the reader's voice or delivery distract you from **comprehension** and **critical interaction** with the content of the materials.
   f) Recognize that the reader's voice, tone, and inflection convey an interpretation of the author's meaning; **don't passively accept** this **interpretation** without exploring alternative interpretations.

Conclusion

Audio materials are a good alternative for other modes of reading. However, large type, braille and audio materials are not in competition with each other. It cannot be perceived as an "either/or" situation. Each is essential for the needs it best serves. With an adequate understanding of the strengths and limitations of each and with careful, selective use, they complement and supplement each other.

Areas where audio materials are less effective than braille or large type include:

1. Improvement in spelling and punctuation skills
2. Flexible control over reading rate for previewing, quickly skimming to find main ideas or for concentrated study which requires retracing, skimming, or scanning
3. Efficient utilization of references such as index, glossary, dictionary, encyclopedia
4. Nonverbal visual displays like pictures, maps, charts, graphs
5. The process of storing, recording, and retrieving personal notes
6. Labels
7. How-to-do-it instructions as in recipes, assembly instructions, and other manuals

In conclusion audio reading is an effective and efficient alternative to braille and print reading for many types of reading needs. Furthermore, audio reading is a skill that can and must be learned before maximum effectiveness or efficiency can be reached. Learning this skill does not occur instantly or spontaneously but requires concentrated effort and practice over a number of years.

---

*(Russell and Russell, 1959, pp. 6 & 7) Tuttle uses audio reading in preference to auding. According to Brown, "Auding is to the ears what reading is to the eyes. If reading is the gross process of looking at, recognizing, and interpreting written symbols, auding may be defined as the gross process of listening to, recognizing, and interpreting spoken symbols."

Readings

Abel, Georgie Lee, Ed. *Learning Through Listening: Applying Listening Skills to the Curriculum*. Sacramento: California State Department of Education, 1973.

Barbara, Dominick A. *The Art of Listening*. Springfield, Ill.: Charles C. Thomas, 1958.

Barker, Larry L. *Listening Behavior*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1971.

Bishop, Virginia E. *Teaching the Visually Limited Child*. Springfield, Ill.: Charles C. Thomas, 1971.

Brothers, Roy J. "Learning Through Listening: A Review of the Relevant Factors," *The New Outlook*, September, 1971.

Brown, James I. "The Measurement of Listening Ability," *School and Society*, LXXI, February 4, 1950, pp. 69-71.

Duker, Sam. *Listening Bibliography*. Metuchen, N.J.: The Scarecrow Press, Inc., 1966.

Duker, Sam. *Teaching Listening in the Elementary School*. Metuchen, N.J.: The Scarecrow Press, Inc., 1971.

Houston, Celestine. *Learning to Listen*. Minneapolis, MN.: T.S. Denison and Co., Inc., 1968.

Kratoville, Betty Lou. *Listen, My Children, and You Shall Hear*. Danville, Ill.: The Interstate Printers and Publishers, Inc., 1968.

Nichols, Ralph G. and Lewis, Thomas R. *Listening and Speaking*. Dubuque, IA.: W.C. Brown, 1954

Nichols, Ralph G. and Stevens, Leonard A. *Are You Listening?* New York: McGraw-Hill Book Co., 1957.

Rankin, P.T. "Listening Ability: Its Importance, Measurement, and Development," *Chicago Schools Journal*, 12, January 1930, pp. 177-179.

Rathgaber, Sister Jean Marie. *A Sound World Experimental Listening Curriculum, Grades K-9*. Washington, D.C.: U.S.

Dept. of Health, Education, and Welfare, Office of Education, Bureau of Research, 1969.
Russell, David H. and Russell, Elizabeth F. *Listening Aids Through the Grades.* New York: Bureau of Publications, Teachers College, Columbia University, 1959.
Spache, George D. and Spache, Evelyn B. *Reading in the Elementary School.* Boston: Allyn and Bacon, Inc., 1973.
Taylor, Stanford E. *Listening,* #29. Washington, D.C.: National Education Association, 1964.

Commercially Available Listening Aids

(Codes refer to company names, which are listed later with their addresses.)

1. "I Heard It with My Own Ears," (M-B) 12 cassettes. Familiar and not-so-familiar sounds; city, music, animals.
2. "Buzzer Board," (DLM) Nonverbal auditory discrimination. Uses short and long signals in simple, then complex patterns.
3. "Audi-Ball," (ConP) No. AB 30. Eight-inch ball containing large bell. Soccer ball construction.
4. "Early Childhood Record Series" (Kim)
   Series 5-9 Christmas, fairy tales, marches, songs of the sea, all-American
   Series 10 Numbers, instruments, nursery rhymes, sounds of the city, jungle animals, and farm animals
   Series 13 Stories and songs presenting concepts of distance, measuring, etc.
5. "The A.D.D. Program: Auditory Discrimination in Depth," by Charles H. and Patricia C. Lindamood. Structured for classroom use by Teaching Resources Corp.
6. "Basic Training in Auditory Perception" (ConRec)
   Vol. 1 Varying pitches, intensities, and tempos
   Vol. 2 Distinguish environmental sounds, respond to relevant sound
7. "Listening with Mr. Bunny Big Ears," (EA, ERS, Kim) Six 12-inch records. Dramatic play emphasizes a particular sound.
8. "Building Verbal Power" (EA, ERS, Kim)
   Album 1 Exercises and games dealing with opposites, sentence completion.
   Album 3 Develops ability to think categorically and reason verbally through training in construction and use of simple similes and analogies.
   Album 4 Encourages use of descriptive language through experience with noun and verb modifiers.
   Album 5 Practice arriving at word meaning through context clues.
9. "Auditory Training Records" (Maico)
10. "Meet Mr. Mix-Up," (EA, ERS) 12-inch record, cassette. In music and rhyme, students spot mistakes and omissions.
11. "What is Listening?" (ERS) One 12-inch record. Teaches not only the "how" but the "why" of listening.
12. "Comprehension Through Listening" (ERS) records
    Vol. 1 Listen for main idea and subordinate idea in selections
    Vol. 2 Expand skills in listening selectively
13. EAV Materials
    "The Parts of Speech," Songs and jingles
    "The Sound Way to Easy Reading," 4 records, 15 charts: phonics
    "The Magic Key to Sound Spelling," 2 records. Secondary and college level
    "Techniques in Reading Comprehension," Analytical and critical thinking
14. "My Weekly Reader — Listening Comprehension Paragraphs," (AEP) 1966. Fourth, fifth, and sixth grades.
15. "Listening Skills Program," (SRA) Grades 1-6. Twenty-four lessons for each grade. Cassettes, open-reel tapes, records. Primary grades: activities include awareness of pitch, volume, fantasy, and developing sentence patterns, etc. Intermediate grades: activities include auditory discrimination, following directions, remembering sequence and details, etc.
16. "Alameda County PACE Center Listening Project," (Ala) Training materials for listening skills for grades 2, 5, 8, and 11. Based on language comprehension skills and critical thinking skills.
17. "EDL Listen and Think Program," (EDL) Grades 1-9. Cassettes adapted by APH.

Level 1-2 — Develop listening and thinking skills such as recognition of concepts of space and time, cause and effect,

	alike-different, etc.
Level 3-6	Identifying main ideas, recognizing sequence, summarizing, comparing, drawing conclusions, etc.
Level 7-9	Understanding character, setting, conflict, theme, qualities of literature, recognizing climax, etc.

Code Used	Company Addresses
Ala	Alameda County Schools Curriculum Library, 224 West Winton Ave., Hayward, CA 94544
AEP	American Education Publications, 1250 Fairwood Ave., Columbus, OH 43206
APH	American Printing House for the Blind, 1839 Frankfort Ave., Louisville, KY 40206
ConRec	Concept Records, Box 524, North Bellmore, NY 11710
ConP	Constructive Playthings, 1040 E. 85th St., Kansas City, MO 64131
DLM	Developmental Learning Materials, 3503 N. Ashland Ave., Chicago, Il. 60657
EA	Educational Activities, Inc., P.O. Box 392, Freeport, NY 11520
EAV	Education Audio Visual, Inc., 29 Marble Ave., Pleasantville, NY 10570
EDL	Educational Development Laboratories, Coast Visual Education Co., 5610 Hollywood Blvd., Los Angeles, CA 90028
ERS	Educational Record Sales, 157 Chambers St., New York, NY 10007
Kim	Kimbo Educational Records, P.O. Box 55, Deal, N.J. 07723
Maico	Maico Company, 21 N. Third St., Minneapolis, MN 54401
M-B	Miller-Brody Productions, 342 Madison Ave., New York, NY 10017
SRA	Science Research Associates, Inc., 259 E. Erie St., Chicago, Il. 60611
TRC	Teaching Resources Corporation, 100 Boylston St., Boston, MA 02116

ACADEMICS ARE NOT ENOUGH

Techniques of Daily Living for Visually Impaired Children: Some Hints and Suggestions

by
Dean W. Tuttle

Techniques of daily living (TDL) for the visually impaired are more than optional "frills" for the school curriculum; they are an essential complement to the academics. Some teachers and administrators question that this is a function of the school. Others question their own abilities to handle this area of the curriculum. Neither of these positions is justifiable.

Philosophically, the function of the schools in this country is to provide educational opportunities to all irrespective of race, creed, or disability, and to enable all to take their rightful places in society. "To take a rightful place" requires more than just being able to read, write, and calculate. It means being able to: manage affairs (personal hygiene, dressing, grooming, etc.), live independently in a community (housecleaning, cooking, sewing, repairs, etc.), and handle a job suited to the potentials (training and placement). It means being able to integrate into the life of the community (civic, social, recreational, etc.), and to travel independently to meet obligations (orientation and mobility). To the nondisabled, these skills seem superficial and elementary. To the visually impaired who are limited in the ability to learn by observation and visual imitation, such skills are stumbling blocks unless specifically taught and mastered.

Schools, generally, have provided the academic skills required by visually impaired children. The Department of Vocational Rehabilitation has provided job training and placement and re-training for the newly blinded adult. In recent years schools have begun to meet their orientation and mobility obligations by hiring a trained mobility instructor.

However, too many public, private, and residential school graduates simply do not know how to manage their own personal affairs, nor do they know how to live independently and happily integrated into the life of a community. Traditionally, parents of normal children have assumed responsibility for such development and growth; but, parents of visually impaired children look to the professionals for help, direction, and guidance. Historically, residential schools have developed formal and informal ways of teaching self-care skills for personal management. However, more than half of the visually impaired school age group is enrolled in community school programs today. Therefore, more and more teachers must assume a greater responsibility for teaching techniques of daily living.

Daily living demands a variety of skills in areas from brushing teeth to baking a cake. Before becoming involved in the specifics of special areas, consider some general principles that apply to all areas. Among the more important of these considerations are:

1. Certainty that the student **understands** the **value** of **mastering** each **TDL** skill. It cannot be assumed that a student wants to be socially acceptable. A student who has been taught the correct use of a spoon and fork may find it much easier to use fingers when the teacher is not present.

2. Identification of **entry skills required** for each task. Determination that students have mastered prerequisites sufficiently to be successful. A thirteen-year-old girl pinning a pattern to material in preparation for a sewing lesson must already know how to use a pair of scissors. Also, as a part of these entry skills, students must fully understand the concepts involved in performing a task. A boy who is learning to make a bed cannot be unaware of the significance of "wrinkles" in the bed covers or what it means to "straighten the covers." Making assumptions about prior experiences and basic concepts is risky, to say the least.

3. Before beginning any task, **orientation** of student **to work area,** materials, and tools to achieve maximum efficiency. The teacher must use key points of reference to enable students to locate everything needed. This sense of location puts students much more at ease and receptive to instruction.

4. Certainty that the student's **work area** is well **organized** with everything in its place. Work trays containing all necessary materials and ingredients provide a boundary or limit for finding the needed items. This is essential for the young blind, and older students find it helpful when using an array of items.

5. Proper **labeling** of **items** which are not easily recognizable by size, shape, weight, sound, color, etc. Rubber

bands, magnets, tags, and dymo-tape are all useful in labeling. For example, the way one puts on one, two, or three rubber bands is all that may be necessary to distinguish the different flavors of jello. When consumable items are used up their labels can be placed in a box to form the beginning of shopping lists. These same labels can then be placed on the newly purchased items. A price list from Lobel Labels is available from: Mrs. Gladys Loeb, 2002 Forest Hill Drive, Silver Spring, MD 20903.

6. Recognition that the more physical **contact** students have **with** the **work surface** or task to be performed, the easier it is for them to monitor personal behavior. For example, a student who is washing dishes needs to be in physical contact with the dish surface to determine how clean it is. Thus, wearing gloves is not very practical. By the same token, a student preparing food in the kitchen may find that stirring and mixing with a spoon is not as effective as stirring and mixing with the fingers.

7. Determination that, when appropriate, the table or **work area** is **covered** with newspaper, wax paper, cookie sheet, etc., to keep the area clean and make it easier to retrieve spilled materials. When polishing shoes, a layer of newspaper is essential to protect the table or counter. Pouring gasoline to wash bicycle parts presents no problem if the pouring is done over a larger pan to collect and retrieve the spillage.

8. Certainty that students know and practice the **precautions** necessary **to avoid** any potential **hazards** to self and others. For example, to cut away from, not toward oneself, to keep toys, electric cords, and protruding handles out of walkways. To be protected from half-open doors and drawers.

9. Ascertaining that students **recognize** when and how much **assistance** is **needed.** Seeking, accepting, and/or refusing assistance is part of life. Graciously receiving necessary help and graciously refusing all other help is a mark of maturity.

10. Determination that all **instructions** are **clear** and **precise** as possible. At times it may be necessary to physically demonstrate a task. If a student does not understand the steps in tying a necktie, he may have to physically feel the teacher's hands in motion, or the teacher may have to physically guide his hand and/or the necktie. Before doing this, however, the teacher should be sure to ask the student's permission. Some blind persons resent being touched, or are startled by being touched, unless their **permission** has been **obtained.**

11. **Allowing time** to teach and time for each student to learn to perform a task. When teachers and parents are hurried, frequently time is saved by doing things for blind students who should and could do for themselves, but, of course, more slowly. Usually these are little things like putting on a coat, getting braille paper, or wiping off a table, but little things have a way of adding up to big things. Mastery of a skill is more important than meeting a deadline on a clock.

12. Realization that too much **supervision** is as bad as too little supervision. Every child has the right to succeed and/or fail. It is through the experience of succeeding and/or failing that students discover their own individual strengths and limitations.

An effective program in techniques of daily living requires a team effort. Parents can't do the job by themselves any more than teachers can. Whenever possible, parents, teachers, siblings, friends, community agencies, and youth groups should all work together toward the same end.

With this background, a brief discussion of some specific TDL topics is in order. It must be understood that many tasks do not require any modification or adapted equipment. For example, taking a shower or making a bed involves the same steps whether a person is blind or sighted. Furthermore, there are very few TDL tasks which require vision to such an extent that a blind person cannot perform them.

Frequently there is more than one way for a blind person to accomplish a specific task. The variety of approaches is limited only by a lack of creativity and imagination. The suggestions offered below are only intended to represent the more frequently asked questions. A list of reference manuals is included in the last paragraph of this chapter for the teacher who needs to pursue additional information.

Personal Care and Grooming

1. **Brushing teeth:** The most difficult task is the application of the toothpaste. This may be done in one of four ways. The index finger of the hand holding the toothbrush can rest along side the bristles as a guide for the toothpaste. The bristles can be held between thumb and index finger and the toothpaste applied. The toothpaste can be applied directly on the finger and then into the mouth. Or it may be easier to have a personalized tube which can be squeezed directly into the mouth.
2. **Combing hair:** Hair can be parted by using a single tooth at one end of the comb, drawn through the hair. One side is held down while the other side is combed into place. Neatness is checked with a **light** touch.
3. **Polishing shoes:** Using wax polish facilitates closer contact with the shoes. Fingers placed directly into the wax permits the student to achieve a smoother, more even application. A little vaseline on the fingers before putting them in the shoe polish makes the clean-up job easier. Liquid wax can be applied with a rag.
4. **Fingernails:** The use of clippers must be demonstrated since fingernails and toenails can best be cut in this way. Filing is helpful to take care of rough edges.
5. **Shaving:** An electric shaver is easier and safer to use, especially for the beginner. However, many blind persons prefer the close shave of an ordinary safety razor. In either case, key parts of the face or legs are used as points of reference (e.g., part of the ear for length of sideburns). Tactual inspection by rubbing the fingers against the grain will reveal any remaining hair.
6. **Lipstick:** Students need to take great care in the application of lipstick, to practice application, and seek visual checks by a seeing friend until the skill is acquired. Some find it helpful, especially when learning the skill, to place an index finger along the edge of the lip to delineate the area for application.

Dressing

1. **Buttoning, Buckling, Zipping:** For teaching, use articles of clothing that are actually worn, providing a normal approach and orientation. The same task performed in books and on boards lying on the table bears little resemblance to the dressing skill required.
2. **T-Shirt and other pull-overs:** The T-shirt or other pull-over is laid on a bed with the back side up and neck farthest away. This frees both hands to explore the garment and to slip into it.
3. **Tying shoes:** Tying shoes can sometimes be more easily taught by the "two loop" method. The over and under steps of the first half knot are learned. Then two loops are formed and with them, the same over and under steps are followed. Using two different textures or colored laces facilitates the instruction.
4. **Matching clothes:** An awareness and appreciation of color and pattern combinations must be taught before the value of labeling clothes is recognized. With sighted help, clothes can be labeled appropriately using braille tags, a pattern of French knots, or simply by the unique texture quality of the material.
5. **Clothing styles:** The value of keeping current with clothing styles needs to be recognized. Keeping current can be accomplished by deliberately discussing styles with a seeing friend, shopping in clothing stores, and reading magazines available in large print or braille, or listening to recorded discussions on the subject.

Eating

1. **Place setting:** By placing the hands at the edge of the table on either side of the plate and trailing on both sides of the plate with the fingers extended, the silverware and dishes adjacent to the plate can be located. If further exploration is required, contact with the table should be maintained to prevent knocking things over.
2. **Use of utensils:** The many different ways utensils are used need to be pointed out. Spoons can be used for scooping, ladling, stirring, scraping, etc. Forks can be used for spearing, scooping, cutting, rolling, anchoring, etc. In addition, the correct way of holding the utensil for each function needs to be taught.
3. **Food on a plate:** The food on a plate can be located and recognized by a touch of a fork, smell, and differences in temperature. In instructing students, the plate should be turned so that the meat is closest to the blind individual (at 6 o'clock), especially if the meat needs to be cut. When possible, the best anchored food, like mashed potatoes, should be at 11 o'clock (or at one o'clock for left-handed persons) so that the vegetables and other foods can be pushed against the anchored food.

4. **Pushers:** Instruction in using bread or a knife as a pusher is needed. It may be a help in getting stubborn foods onto a fork or spoon.
5. **Posture:** Sitting erect without slouching is a must. Most foods will make it to the mouth without difficulty. To avoid spilling foods, in the lap or on the floor, the trunk of the body is leaned forward so that the mouth is over the plate.
6. **Cutting:** When cutting with a fork, a bite-size can be determined by rolling the fork from the edge of the food a 180-degree turn, and then cutting. When cutting with a knife, a bite-size is anchored with the fork and then a half-circle is cut around the fork. Then the larger piece is anchored with the knife while the bite is pulled away with the fork.
7. **Keeping foods from spilling:** While eating, foods are scraped to the center of the plate to avoid spilling. The dish must be held securely when applying any pressure, as in cutting with a fork.
8. **Salt and pepper:** Salt and pepper can be distinguished by their differences in weight or by shaking a little into the palm of one hand. To estimate the amount of salt being applied, food can be salted through the fingers, or the desired amount can be poured into the palm and then onto the food.
9. **Special containers:** Catsup and mustard can best be handled in special squeeze containers, syrup in syrup pitchers with a slide action. The amount dispensed is estimated by tactile comparison of pressure exerted and quantity received.

Care of Clothing

1. **Hanging clothes:** When putting clothes away in a closet, organization is essential. One garment per hanger allows the hanger to be appropriately labeled. The teacher should have the student check tactually to see if the garment is hanging properly.
2. **Removing lint:** Lint can be removed with either a brush, lint roller, or simply a roll of masking tape with the sticky side out. Overlapping strokes are required. Teachers should tactfully explain that more frequent and more thorough de-linting is required if blind persons are to avoid the unkempt look.
3. **Soils and tears:** A check for tears, lost buttons, and soiled spots should be made after each wearing. In addition, periodic close checks for stains, conducted by a seeing person, are necessary.
4. **Sorting dirty clothes:** Identification techniques for sorting dark and light clothes for washing are needed. The sorting can be done just before washing, but it is easier to sort daily into two different hampers or clothes bags.
5. **Washing clothes:** To measure soap, it is easier to scoop out dry powder than to pour liquid detergents. Dials of the machines can be labeled at critical points (control buttons) with white glue or tape.
6. **Ironing:** Ironing can be effectively and safely done by the properly oriented student. The dial of the iron can be marked at frequently-used settings with daubs of white glue or tape. Sometimes it is helpful to put the iron on an iron rack. To find a hot iron, the cord is followed up to the handle of the iron. Before beginning to iron, the garment should be smoothed with both hands. Ironing should proceed in a systematic way from one small section to another as in ironing from one seam to the next. To avoid scorching a cooler iron than necessary can be used at first.
7. **Folding clothes:** Clothes which are to be folded should first be laid out on a clear, flat surface so that both hands can be involved in the folding process. The student should be introduced to a variety of folding methods. The favorite ones for the various kinds of garments can be learned.
8. **Packing a suitcase:** When packing a suitcase for a trip, rolling clothes results in fewer wrinkles. Sets of clothes for each day can be rolled together.

Housecleaning

1. **Washing dishes:** Sharp knives need to be set aside so they can be located later for washing. When stacking dishes to be washed, the taller things should be put at the back of the counter to avoid knocking them off.
2. **Cleaning techniques:** When applying a cleaning technique to any surface, either overlapping circular, or overlapping parallel strokes can be used. Any large surface to be cleaned should be broken up into smaller, well-defined sections. Furniture, books, buckets, etc., can be used to define smaller sections.

3. **Dusting:** Dusting with a treated rag or mop holds the dust, preventing shifting the dust from one surface to another. If the surface to be dusted contains knick knacks or other objects, these need to be removed and placed under the surface in the same relative position. This makes it easier to return them to their original position.
4. **Sweeping and scrubbing floors:** In order to be in physical contact with the work, one may need to get down on hands and knees. Another good method is to work barefooted. Only by being in physical contact with the floor can a blind individual tell how well the job is being done. Generally, it is easier to sweep toward a flat wall or built-in counter than it is to sweep toward the center of the room.
5. **Vacuuming:** After the above cleaning techniques are introduced, vacuuming should be presented. One good method in vacuuming is to divide the carpeted area into smaller, well-defined sections using furniture, broom handles, etc. The student can be shown how to work from a wall toward the center of the room.
6. **Electrical cords:** Every care must be taken in the instruction and the use of electric cords. To plug in electrical appliances, prongs of the plug should be aligned tactually with the slots in the electrical outlet; **but** the aligning finger must be removed before inserting the plug to avoid shocks.
7. **Washing windows and mirrors:** Glass sprays or foaming glass cleaners are useful for several of the cleaning techniques described above. However, washing windows with a detergent solution and rinsing with a vinegar and water solution is also effective. For lint-free windows, polish with newspapers. Instruction in methods as well as equipment is needed.

The Kitchen

1. **Recipes:** Recipes brailled on plastic thermoform paper can be washed without damaging the braille. Recipe cards containing the general instructions for frequently prepared, packaged foods (cake mixes, frozen vegetables, etc.) are useful. Each individual needs to devise a method for managing a personal recipe card file.
2. **Measuring spoons and cups:** It is easier to use measuring spoons and cups with metal handles that have been bent up, permitting ladling directly out of a canister or wide-mouthed jar. This technique and the method for bending the spoons and cups need to be learned.
3. **Sharp knives:** The use of a knife rack prevents accidental cuts while searching in a drawer. Approaching the rack so as not to handle knives at the cutting end must be taught.
4. **Cutting vegetables and fruits:** A vegetable cutter with a series of knife blades mounted in a press can save time and fingers when slicing, dicing, and sectioning fruits or vegetables. The student needs supervised experiences first with the equipment, then with the process.
5. **Pouring liquids:** Three ways to pour liquids can be presented to students: (1) With glass set on table, hold the glass between the thumb and middle finger, with the index finger curled over the top of the glass. Resting pouring spout on glass, pour liquid until it reaches the index finger. (2) Grasp the glass securely to determine the temperature if the liquids are very hot or cold. (3) With practice, the weight of the glass offers clues as to how full it is. (4) With the glass held above the table between the thumb and middle finger, the index finger is used as a guide for the pouring spout. In this case, the pouring spout cannot be in contact with the glass.
6. **Separating an egg:** To separate a yolk from the white of an egg, four procedures may be tried. The easiest is using the bare hand, allowing the white of the egg to slip through the fingers. Also possible for use is a large kitchen spoon with holes in it, a small funnel, or a commercial egg separator.
7. **Ice cream dipper:** An ice cream dipper is useful for measuring drop biscuits, meat balls, or for filling muffin pans. The relative merits of the plain and trigger types can be determined by experimenting with both.
8. **Stove:** Operation of the stove needs to be experienced under supervision. The relative merits of electric and gas using models need to be known. An electric stove is easier for temperature control and is less likely to ignite potholders, sleeves, etc. However, the heat on a gas stove can be regulated by holding a palm above the flame and turning the gas up or down with the other hand until the desired temperature is reached. In lighting a gas stove a long-handled flint or long-handled wooden match must be used.
9. **Dial controls:** As in the case of the washing machine, the dials on a stove, as well as other kitchen appliances, can be marked at critical settings with drops of white glue or small pieces of tape.
10. **Placing pots on burners:** Pots can be easily centered on burners when both pot and burner are cold and a

fork can be used to measure around the pot when either pot or burner is hot. Pot handles should never protrude over the edge of the stove where they could be accidentally bumped.

11. **Determining when foods are done:** In determining if foods are cooking or cooked, using a timer, listening for cooking sounds, smelling for appropriate aroma, or feeling with a fork are the accepted routes. However, each is a subtle operation and requires practice.
12. **Oven frying:** Oven frying foods like chicken, sausage, and bacon is easier than frying on a burner because it avoids the necessity of turning the food.
13. **Reaching into a hot oven:** Heavy gloves or potholder mitts must be used to protect the back of the hand when working in a hot oven. If no glove or mitt is available, a knife or other long-handled utensil can be used to locate the oven rack desired while using an ordinary potholder in the other hand.
14. **Maintaining the shape of fried foods:** A tuna can with both ends removed can be placed in a frying pan and will serve to contain the shape of fried foods. The jagged interior circumference of the can must be handled cautiously.
15. **Kitchen aids:** There are many adapted kitchen aids and appliances available from the American Foundation for the Blind. Some of these include the magna wonder knife, brailled timers, sauce pan with locking lid, pie cutting guide, bacon crisper, etc. A demonstration of these is helpful.

Sewing

1. **Buttons:** Learning how and having time to practice sewing on a button is a must for all individuals. It should also be noted that a button that has come off can be temporarily fastened in place on the garment with a safety pin to insure sewing the right button back in the right place.
2. **Patching:** Iron-on patches are much easier to apply than sew-on patches, though not as durable. Instruction in both methods is useful.
3. **Threading a needle:** Threading a needle should be one of the first lessons. The operation can be accomplished in one of several ways: (1) a wire loop needle threader which is uncomplicated, but fragile; (2) some models of automatic needle threaders which are effective; (3) self-threading needles which have a slot at the base of the eye for inserting the thread; (4) pre-threaded needles with colored thread which have been identified with braille labels and are available at AFB. The self-threading needles (3) tend to be unthreaded with uneven pressure or pulling.
4. **Sewing machines:** Machine sewing is not difficult once the blind person has been well oriented to the parts of the machine. There are three key functions that the blind person must master: threading the machine and needle; preparing the bobbin; and setting the hem guide accurately. It may be helpful to use a heavier than normal thread at first. A needle guard is advisable. If no hem guide is available, layers of adhesive or masking tape on the plate can serve as a guide for the material. The Viking Sewing Machine has special adaptations for the visually handicapped. Information regarding the machine is available from Husguarna of Sweden, Inc., 151 New World Way, South Plainfield, New Jersey 07080.
5. **Patterns:** Converting patterns to heavier paper (such as butcher paper) makes the pattern easier to cut around. Indented or "V" darts are easier to handle than protruding darts. More frequent pinning of the pattern is desirable.
6. **Tape measures:** Braille tape measures are available from AFB. However, "home-made" models can be easily constructed by placing staples to mark each inch (two staples for each foot) on an ordinary cloth tape measure.
7. **Basting:** In learning to baste, it should be observed that pins can serve as a guide for the stitching if a sufficient number are placed closely together.
8. **Knitting:** Knitting requires no special modifications other than having instructions in braille or large print and having the colors identified appropriately. Beginning students in knitting or crocheting may find heavier yarn or thread and larger needles or hooks useful.

Use of Tools for Home Repair

1. **Screwdrivers:** Screwdrivers with spring loaded clips which hold the screw in place are of benefit for use by

the blind. The use of the simple T-handled screw starter for initial placement of the screw also needs to be demonstrated.

2. **Hammer and nail:** Students should be shown how to shorten up on the handle of the hammer while tapping the nail in place. After the nail is placed, the student can be shown how to remove the guide finger from the nail and take a fuller swing with the hammer, allowing the hammer to bounce on the nail between strokes. Sound clues are adequate to indicate when a nail is bending or entering at an angle.
3. **Sawing:** A nail or other sharp object is used to scratch a line in the board to be sawed. Another effective saw guide is the use of the narrow board held in place with C-clamps. Of course, a miter box is most helpful for cutting exact angles. Students need to be taught how to use each of these.
4. **Power tools:** Use of power tools is no more dangerous for a blind person than for a sighted person provided the normal safety devices of fences, guards, etc., are utilized. But in teaching the use of these tools, all parts and operations must be carefully explained.
5. **Electronic equipment:** Demonstration of adapted electronic equipment such as the VOM impedence bridge, transmitting tuning aid, recording level indicator, etc., (all of which are available from Science for the Blind) is useful for the older blind student.
6. **Magnets:** A magnet or magnetized tool is sometimes helpful in retrieving lost metal objects. Students need to be shown how to use the tool.
7. **Home repairs:** Acquiring the ability to do simple home repairs like changing light bulbs, replacing broken window panes, replacing faucet washers, repairing damaged electrical cords, etc., enables the blind student to contribute to the welfare of the home.

Miscellaneous

1. **The telephone:** Dialing a telephone can be accomplished by counting around from 1 to 0 with the index finger until the desired number is reached. A quicker way is to use as many of the fingers as needed simultaneously, starting from either the 1 or 0, landing the index finger directly into the hole desired. For example, if 8 is desired, the ring finger finds 0, the middle finger finds 9, and the index finger is ready for 8.
2. **Money identification:** Early instruction of students in identification of coins by size and rough or smooth edges is essential. Folding each denomination of paper currency in a different way or placing in separate compartments in the billfold, **after** denominations have been identified by a seeing person, must become routine.
3. **Filing cards:** When developing file cards for address and phone numbers, recipes, or other notes, the name or subject should be brailled on the bottom line with the address and phone number or other information on the lines above. Placing the card in the file with the braille away from the reader, with the name or subject on the top line makes it possible for the blind person to read without removing the card from the file.
4. **Lights on or off:** Blind persons need to remember to check light switches or to feel for the heat of the light bulb to determine whether the lights are on or off. From Science for the Blind, a light probe which emits a sound that varies in pitch with the intensity of the light can be obtained.

It is hoped that the principles, hints, and suggestions discussed in this chapter will stimulate teachers and parents acting as teachers to spend more time training students in specific techniques for daily living. The visually impaired who master these skills will not only feel better about themselves, but will be able to contribute much more to their environments. There is a natural tendency for teachers to focus on the short term goals of succeeding in the day-to-day work of the classroom. But in addition to academic fulfillment, somewhere, somehow, the long-term adult needs of the visually impaired must be met if their full integration into society is ever to take place.

It will be noticed that much of the adapted materials and equipment needed in TDL are available from the American Foundation for the Blind, 15 West 16th Street, New York, New York 10011, and Science for the Blind, 221 Park Hill Road, Bala-Cynwyd, Pennsylvania 19004. General Electric will supply braille adaptations for some of their appliances, such as stoves, washing machines, dryers, etc. Furthermore, many additional hints and suggestions can be found in "Dialogue," a magazine published quarterly in print, braille, or sound sheet and written for blind persons. It is available from Dialogue Publications, Inc., 3100 Oak Park Avenue, Berwyn, Illinois 60402.

ORIENTATION AND MOBILITY

by
David L. Kappan

Formalized orientation and mobility instruction as we know it today had its start during World War II. In an attempt to provide services for its war blind, the Army established a rehabilitation program at Valley Forge General Hospital. Under the leadership of Sergeant Richard Hoover, techniques and methodology were developed to provide the blinded servicemen with effective training in independent travel. Once the Army terminated its program, it was assumed by the Veteran's Administration at Hines, Illinois and underwent numerous refinements. As the success of the training became apparent, agencies and institutions providing services for other segments of the blind population began to generate interest in the field of formalized orientation and mobility.

As the demand for orientation and mobility grew, it became apparent that the best setting for training instructors would be the university or college campus. In 1960 Boston College began its graduate program and within a year, Western Michigan University had established a similar program, also on the graduate level. Later, several additional programs came into existence. The University of Northern Colorado, Los Angeles State University, San Francisco State University, and the University of Pittsburgh all are presently conducting graduate programs while Florida State University and Stephen F. Austin State University are providing programs on the bachelor's level.

Four modes of travel are available to the blind individual. They are: the Sighted Guide, the Long Cane, the Dog Guide, and the Electronic Device. The sighted guide and cane techniques are the primary methods of travel dealt with in the orientation and mobility training program. When cane skills are used in a systematic manner and when introduced and developed by a trained orientation and mobility specialist, they often provide a great degree of independence to a large segment of the blind population.

Sighted guide techniques are taught prior to the utilization of cane skills and together with other areas of indoor orientation and mobility provide the blind individual with vital foundations or principles of independence that must be developed prior to travel in the outdoor setting. Although formalized orientation and mobility first began with adventitiously blinded adults, recognition has been given to the skills necessary in teaching orientation and mobility to children and a great deal of importance has been placed on the area of concept development and environmental awareness.

The dog guide services have provided a mode of travel for many blind persons for a number of years. The largest and perhaps best known dog guide program in our country is the Seeing Eye, Inc. of Morristown, New Jersey. It had its start in 1929 and has served over 3,500 blind persons during its existence. Several other nationally known programs include: Leader Dog, Inc. of Rochester, Michigan; The Dog Guide Foundation for the Blind, Inc. of Forest Hills, New York; Pilot Dogs, Inc. of Columbus, Ohio, and Guide Dogs for the Blind, Inc. of San Rafael, California.

A relatively new avenue of travel is the use of electronic devices. A very small segment of the blind population can use this as a method of independent travel. However, the future in this area of endeavor is very encouraging. The two most common electronic devices which are being investigated in the United States today are the Ultrasonic Binaural Sensor and the Bionic Laser Cane.

Indoor Orientation and Mobility Skills

(Compiled with the assistance of Carmen Suminiski)

Teachers of the visually impaired can play an invaluable role in the child's total mobility program by developing and reinforcing basic skills and concepts that ultimately transfer to the outdoor setting. The following precane areas are the foundations of independent travel and must be developed before successful outdoor travel can be undertaken: Sighted Guide, Protection, Navigation, and Familiarization.

Sighted Guide

Position and Grip (Figures 1, 2, & 3)

The guide takes his position beside the student and makes contact with back of hand to back of hand or forearm to forearm. The student grasps the guide's arm just above the elbow, fingers on the inside, thumb on the outside, and

assumes a position approximately one-half step behind the guide. The grip is just firm enough to maintain contact. The guide's arm is positioned next to his body.

Transferring Sides

Transferring sides is often necessary when approaching a group of people or when walking in an indoor setting. The student should move behind his guide while grasping the guide's arm with his other hand. The student can then transfer the free hand to the guide's arm and move to the sighted guide position on the opposite side. This exchange of sides may be done while walking at a normal pace.

Narrow Passageways

When approaching a passageway too narrow for the student and guide to pass through using the normal position, the student should notice when the guide moves his arm back and towards the midline of his body. In response, the student straightens his arm so he is a full step directly behind his guide. When the student can resume the basic position, the guide relaxes his arm.

Accepting or Refusing Aid

When a well-intentioned sighted person wishes to aid a blind person, it is important for the student to know an easy way to refuse that aid or accept it in the position that will be most helpful to him. To refuse, the student draws his arm across the midline of his body and lets it go limp. If this procedure is unsuccessful in breaking contact, the student reaches across with his free hand and grasps the guide's wrist. If the student desires assistance he can assume the correct position and grip. He should mention that this is a method he prefers to use and accept assistance cordially.

Doorways

The pause and body movement of the guide will indicate the presence of a doorway to the student. The student should hold the door open when he contacts it and close it if necessary. Unfamiliar or unusual doorways may facilitate verbal information by the guide. Modifications will be necessary when the student is carrying objects.

Stairways

When **ascending** or **descending** stairs, the guide should approach the stairs at a right angle and pause at the first step. The student can then locate the beginning of the step with his foot and negotiate the stairway, remaining one step behind the sighted guide. The guide's arm levels off when reaching the landing or end of the staircase.

Seating

The guide positions the student in front of the chair in contact with the chair with the side of his leg. The student bends slightly at the knees and clears the chair by sweeping his hand from the front to the back and then turns back and seats himself. If the chair is approached from the rear, the guide merely places the student's hand on the back of the chair and allows him to seat himself. In both procedures, the guide gives appropriate verbal cues as necessary.

Protection

Hand and Forearm Techniques (Figures 4, 5, 6a & 6b)

For protection in familiar settings, the student may extend his arm in front of his body at shoulder height and parallel to the floor, with his palm outward. When protecting the lower body, the student should extend his arm down and forward toward the midline of the body with the palm of his hand facing him. The student may use the upper hand and forearm together with the lower hand and forearm to give both upper and lower body protection.

Trailing (Figures 7a & 7b)

Trailing enables the student to maintain orientation, determine his position in space, locate specific objects, and secure a parallel line of travel. The student should stand a comfortable distance from the trailed surface, extend his arm forward at hip level, and establish contact with the trailed surface with the outside of the little finger. He can then walk along the object using his hand to maintain contact and detect information.

Navigation

Direction Taking

Aligning oneself in a perpendicular or parallel position to a straight lined object allows the student to project a straight line from a determined fixed point. He then has the opportunity to travel in a straight line to his desired objective.

Measurement of Distance and Time

By means of introduction, development, and reinforcement, the student will be able to accurately judge distance and

time so that he can be precise in determining his position relative to a given object. The ability to relate time to the distance traveled will enable the student to be more effective in his travels. Instead of counting steps or doorways, a youngster can estimate distances in hallways and within rooms, e.g., cafeteria seating areas, hallway locker, etc.

Compass Directions

The student should be given a series of evaluative and developmental exercises which develop and reinforce his knowledge of cardinal and secondary compass directions. Compass directions are extremely important to the student because they are constant and not dependent on the student's body position as are the terms right and left. An understanding of compass directions will be helpful to the student in mentally mapping travel routes, in understanding relationships between rooms in a building, and in establishing his position in relation to his environment.

Familiarization

Environmental Information

The student's ability to use environmental information permits him to be alert to his position in space. **Landmarks** are familiar objects, sounds, odors, temperatures, or tactual clues that are easily recognized and have a known location in the environment and which can be used as a point of reference. **Clues** are less reliable since they are not permanent; however, clues are often more valuable as they supply more specific information than that of a landmark. An example of a clue might be the sounds and odors of the woodshop or science laboratory while a landmark might be a specific water fountain or a unique textured wall.

Search or Exploration Patterns

Systematic methods of searching an object, room, or building can often be employed by dividing the area into components. The perimeter method suggests that the area or object be investigated by moving along the periphery in a clockwise or counter-clockwise manner. Relationships can be easily recognized as one continuously refers to landmarks and clues. Another search pattern is that of reducing the whole into units for easier investigation. This is often referred to as a gridline method and is actually the sectioning of an object or area into parts that can be easily explored and related. An example might be the division of a square-shaped room into quarters or sectioning a large, rectangular room into six sections, resembling a braille cell.

Locating a dropped object (Figures 8a & 8b) is an excellent example of how a search pattern can be utilized in a practical situation. When an object is dropped, the blind individual should turn toward the direction of the sound. He may advance forward if necessary to be within reasonable distance of the sound that he has localized. He will then lower himself to the floor by bending at the knees, rather than bending forward at the waist. This will minimize the possibility of his striking his hand on an object. At this point, he may search for the dropped object by placing one hand on the floor in front of him and moving it in a circular or side to side manner in which progressively larger areas are covered.

Numbering Systems

The student should be introduced to his specific environment and become familiar with the various numbering systems used in buildings. Numbering ordinarily follows a logical order where a focal point in that environment will act as a point of reference in locating specific numbers. Most schools do have a numbering system for the individual classrooms.

Independent travel while using a cane requires the services of a trained Orientation and Mobility Specialist. However, the development of the skills and concepts described in this manual provide the necessary foundation for traveling with a cane and are crucial in gaining independence in outdoor mobility.

Common Orientation and Mobility Terms

Orientation:	The process of utilizing the remaining senses in establishing one's position and relationship to all other significant objects in one's environment.
Mobility:	The ability to move safely and efficiently from one point to another in the environment.
Familiarization:	The process of learning the placement and arrangement and relationship within an area.
Navigation:	The act of planning or plotting known facts so as to facilitate efficient movement or mobility.
Landmark:	Any familiar object, sound, odor, temperature or tactual clue that is easily recognized and that has a known location in the environment.
Clue:	Any sound, odor, temperature, tactile or visual stimulus affecting the senses and can be readily converted in determining one's position or a line of direction.
Point of Reference:	A determined fixed point within an environment which is used to have relation or connection with other points within the same environment.
Direction Taking:	The act of getting a line or course from an object or sound to better faciliate traveling in a straight line towards an objective.
Search Pattern:	A systematic approach to locating or determining the position of an object or landmark.
Selectivity:	The ability to choose those techniques or clues which will facilitate the desired end.
Concept:	A mental image of a thing formed by generalizations from percepts.
Percept:	An impression of an object obtained solely by the use of the senses.

References

Kaarlela, Ruth and Widerberg, Lloyd. *Basic Components of Orientation and Movement Techniques.* Graduate College, Western Michigan University, Kalamazoo, Michigan, 1970.

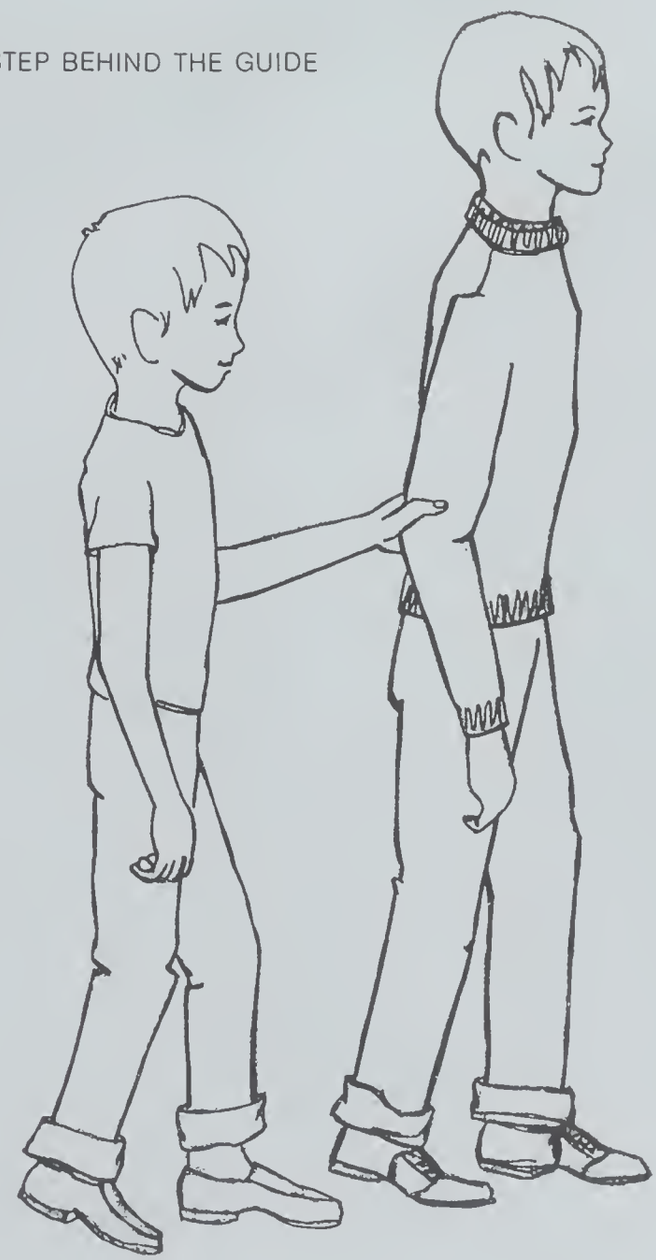
LaDuke, Robert O. "Orientation and Mobility in America — Past and Present," 1970.

Lydon, William T. and McGraw, Loretta M. *Concept Development for the Visually Handicapped Child.* American Foundation for the Blind, Inc., New York, 1973.

USE OF SIGHTED GUIDE

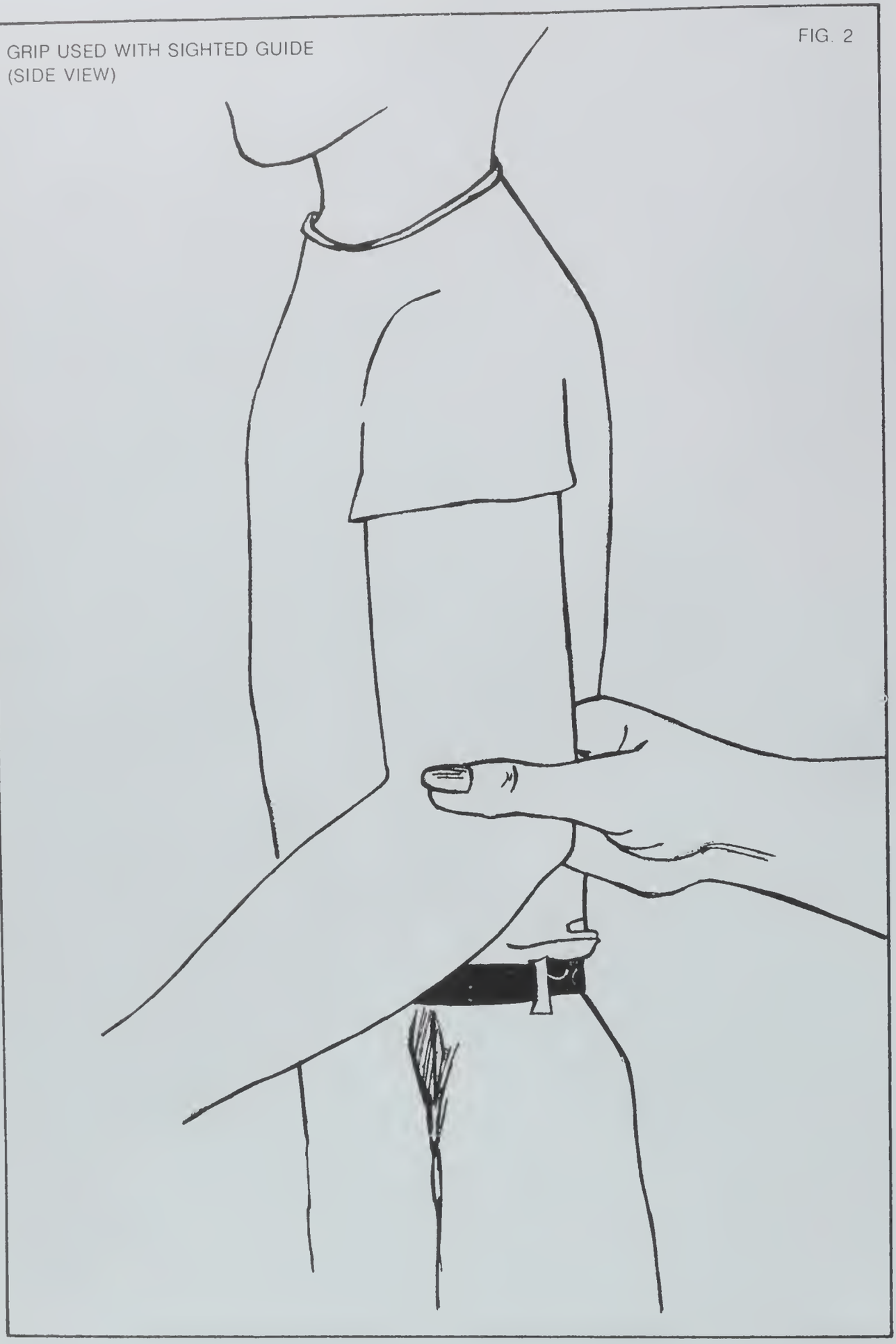
FIG. 1

1/2 STEP BEHIND THE GUIDE



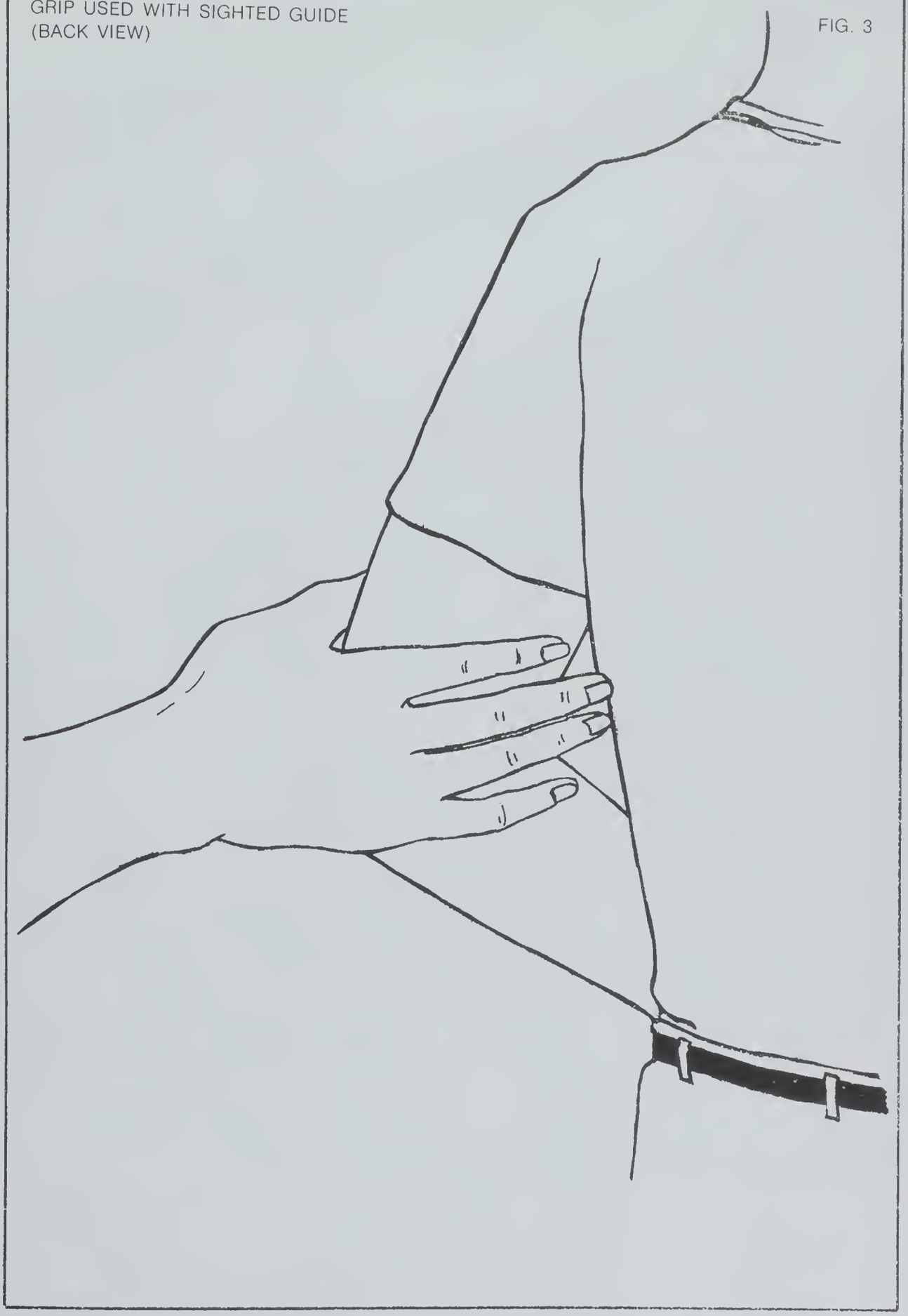
GRIP USED WITH SIGHTED GUIDE
(SIDE VIEW)

FIG. 2



GRIP USED WITH SIGHTED GUIDE
(BACK VIEW)

FIG. 3



UPPER HAND AND FOREARM TECHNIQUE

FIG. 4

LOWER HAND AND FOREARM TECHNIQUE

FIG. 5

FIG. 6a

FIG. 6b

UPPER AND LOWER HAND AND FOREARM TECHNIQUES EMPLOYED TOGETHER

FIG. 7a

SIDE VIEW TRAILING WALL

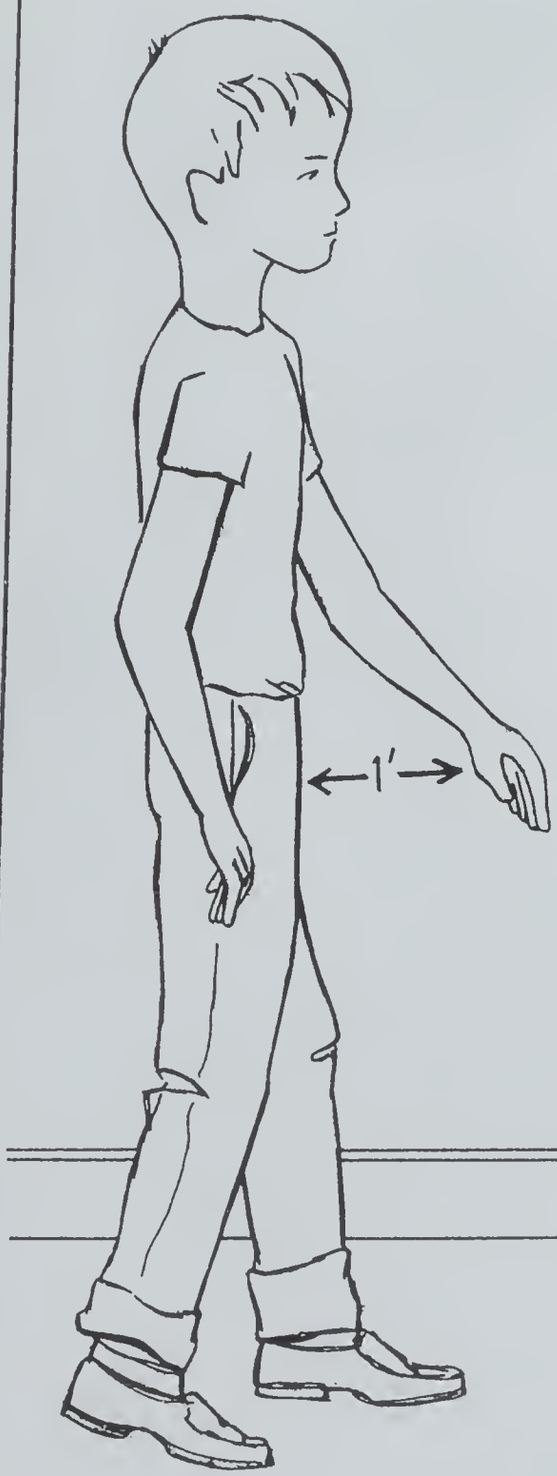
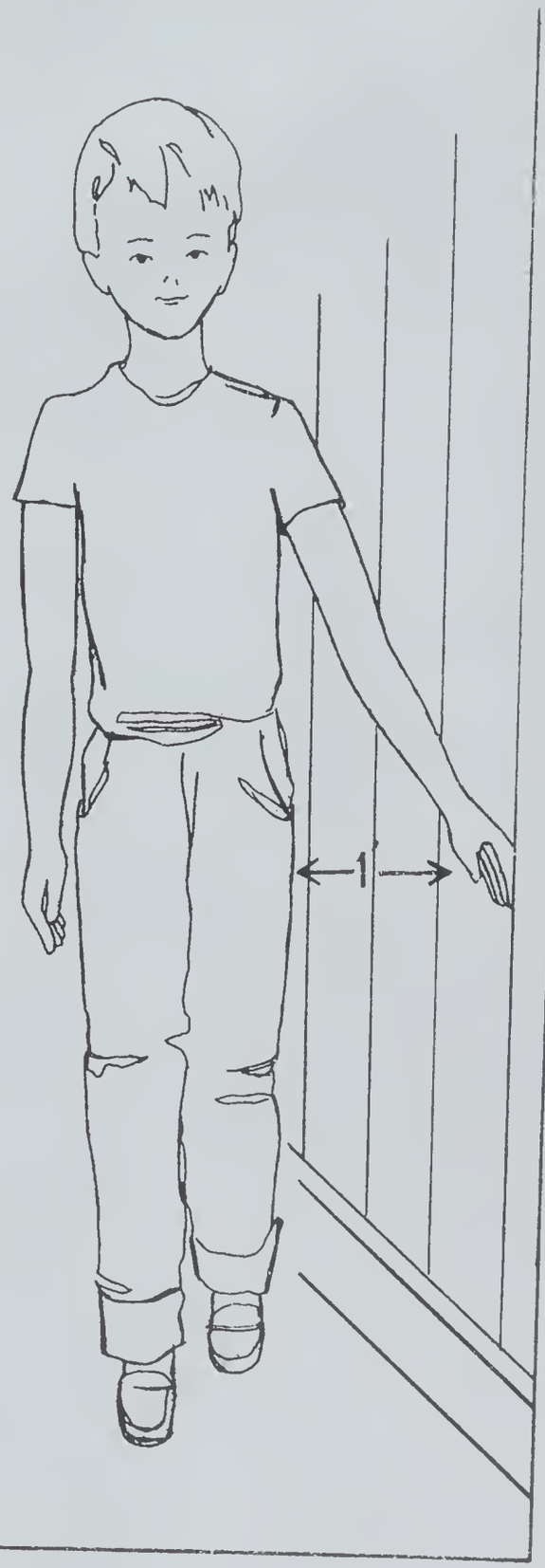


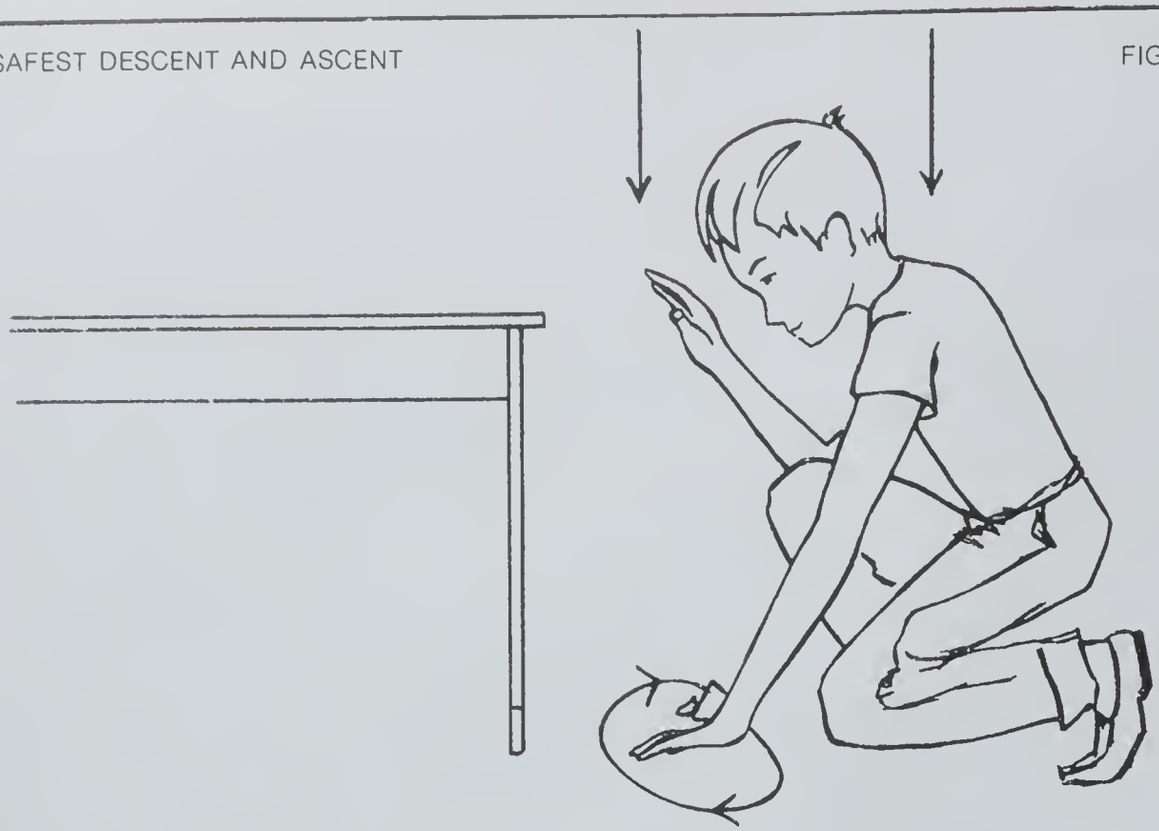
FIG. 7b

FRONT VIEW TRAILING WALL



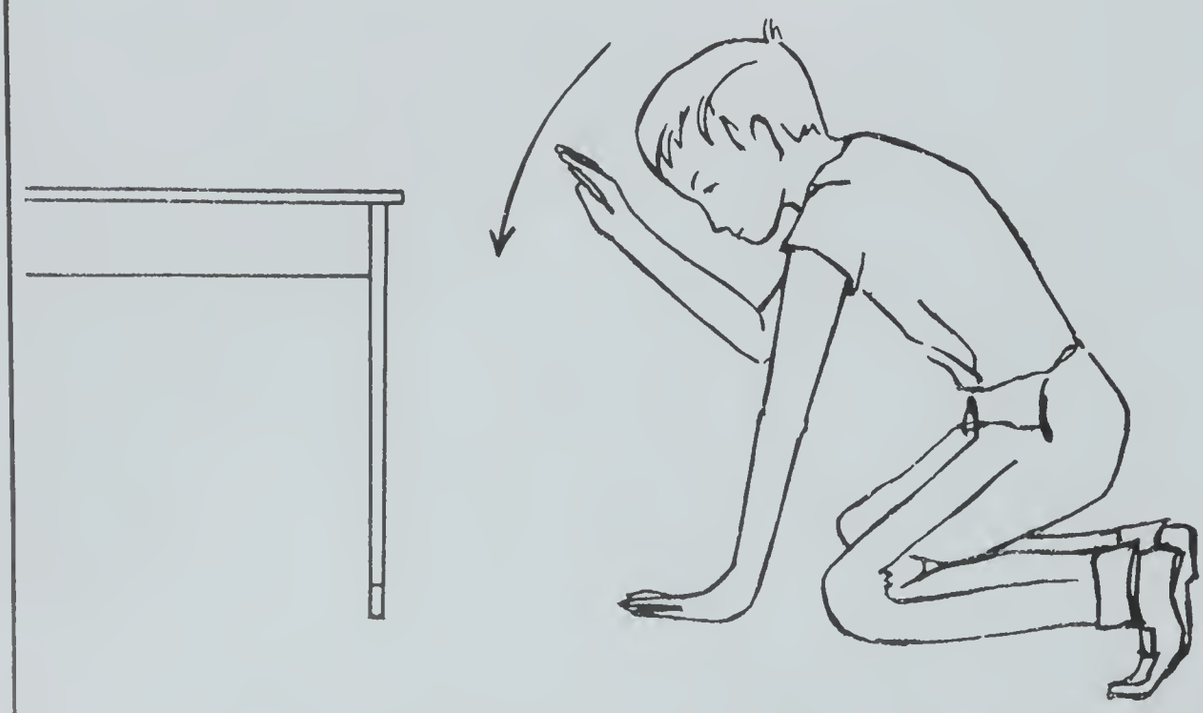
SAFEST DESCENT AND ASCENT

FIG. 8a



HAND PROTECTS HEAD WHILE BENDING

FIG. 8b



SOURCES FOR STATE INFORMATION

Occasions arise when one needs quick access to information in individual states. Parents inquire about special facilities in a state into which they plan to move. A teacher plans to move out of state and wishes to investigate the possibilities of a job in the area of the visually handicapped.

The state department of education, its division of special education, and the state university (department of special education) are sources of contact for such information. The personnel responsible for such information may change, but the information should be current and available from a central source at the state level.

In addition, one reliable source for this type information would be the person acting in the capacity of ex-officio Trustee to the American Printing House for the Blind. The current listing of these is given below, by states:

APH Ex-Officio Trustees from State Departments
June 1981

ALABAMA STATE DEPARTMENT OF EDUCATION, State Office Building, 501 Dexter Avenue, Montgomery, Alabama 36130 — Phone: 205-832-3230

ALASKA STATE DEPARTMENT OF EDUCATION, Bristol Bay Regional Resource Center, 429 "D" Street, Suite 306, Anchorage, Alaska 99501 — Phone: 907-274-4534

ARIZONA DEPARTMENT OF EDUCATION, 1535 West Jefferson, Phoenix, Arizona 85007 — Phone: 602-271-3183

ARKANSAS STATE DEPARTMENT OF EDUCATION, c/o Arkansas School for the Blind, P.O. Box 668, Little Rock, Arkansas 72203 — Phone: 501-663-4185

CALIFORNIA STATE DEPARTMENT OF EDUCATION, 721 Capitol Mall, Sacramento, California 95814 — Phone: 916-445-5103

COLORADO DEPARTMENT OF EDUCATION, Colorado State Library, 1362 Lincoln Street, Denver, Colorado 80203 — Phone: 303-839-2181

CONNECTICUT STATE BOARD OF EDUCATION AND SERVICES FOR THE BLIND, 170 Ridge Road, Wethersfield, Connecticut 06109 — Phone: 203-249-8525

DELAWARE STATE DEPARTMENT OF EDUCATION, The Townsend Building, Dover, Delaware 19901 — Phone: 302-736-5471

FLORIDA STATE DEPARTMENT OF EDUCATION, 5002 North Lois Avenue, Tampa, Florida 33614 — Phone: 813-876-5016

GEORGIA STATE DEPARTMENT OF EDUCATION, State Office Building, Atlanta, Georgia 30334 — Phone: 404-656-6317

HAWAII STATE DEPARTMENT OF EDUCATION, 4967 Kilauea Avenue, Honolulu, Hawaii 96816 — Phone: 808-737-5694

IDAHO STATE DEPARTMENT OF EDUCATION, c/o Idaho State School for the Deaf and the Blind, 14th and Main Streets, Gooding, Idaho 83330 — Phone: 208-934-4457

ILLINOIS STATE BOARD OF EDUCATION, Services for the Visually Impaired, 444 West Reynolds, Springfield, Illinois 62702 — Phone: 217-525-3300

INDIANA STATE DEPARTMENT OF PUBLIC INSTRUCTION, 229 State House, Indianapolis, Indiana 46204 — Phone: 317-927-0216

IOWA DEPARTMENT OF PUBLIC INSTRUCTION, Grimes State Office Building, Des Moines, Iowa 50319 — Phone: 515-281-3176

KANSAS STATE DEPARTMENT OF EDUCATION, 120 East Tenth Street, Topeka, Kansas 66612 — Phone: 913-296-3866

KENTUCKY DEPARTMENT OF EDUCATION, 815 Capital Plaza Tower, Frankfort, Kentucky 40601 — Phone: 502-564-5535

LOUISIANA STATE DEPARTMENT OF EDUCATION, P.O. Box 44064, Baton Rouge, Louisiana 70804 — Phone: 504-342-3636

STATE OF MAINE, Division of Eye Care, Department of Human Services, Augusta, Maine 04330 — Phone: 207-289-3146

MARYLAND STATE DEPARTMENT OF EDUCATION, 200 West Baltimore Street, Baltimore, Maryland 21201 — Phone: 301-659-2000

MASSACHUSETTS DEPARTMENT OF EDUCATION, Central Massachusetts Regional Education Center, Division of Special Education, Beaman Street, Route 140, West Boylston, Massachusetts 01583 — Phone: 617-835-6033 or 6034

MICHIGAN STATE DEPARTMENT OF EDUCATION, Pine at Maple, Lansing, Michigan 48913 — Phone: 517-373-9450 or 9628

MINNESOTA STATE DEPARTMENT OF EDUCATION, Capitol Square Building, 550 Cedar Street, St. Paul, Minnesota 55101 — Phone: 612-296-5172

MISSISSIPPI STATE DEPARTMENT OF EDUCATION, Box 771, Jackson, Mississippi 39205 — Phone: 601-354-6950

MISSOURI DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION, c/o Missouri School for the Blind, 3815 Magnolia Avenue, St. Louis, Missouri 63110 — Phone: 314-776-4320

MONTANA STATE DEPARTMENT OF PUBLIC INSTRUCTION, c/o Montana School for the Deaf and the Blind, 3911 Central Avenue, Great Falls, Montana 59401 — Phone: 406-453-1401

NEBRASKA STATE DEPARTMENT OF EDUCATION, Box 129, Nebraska City, Nebraska 68410 — Phone: 402-873-5513

NEVADA DEPARTMENT OF EDUCATION, 400 West King Street, Capitol Complex, Carson City, Nevada 89710 — Phone: 702-885-5700, Ext. 214

NEW HAMPSHIRE EDUCATIONAL SERVICES FOR THE VISUALLY HANDICAPPED, 3 Bud Way, Nashua, New Hampshire 03060 — Phone: 603-880-8260

NEW JERSEY COMMISSION FOR THE BLIND, 1100 Raymond Boulevard, Newark, New Jersey 07102 — Phone: 201-648-3330

NEW MEXICO STATE DEPARTMENT OF EDUCATION, c/o New Mexico School for the Visually Handicapped, 1900 North White Sands Boulevard, Alamogordo, New Mexico 88310 — Phone: 505-437-3505

NEW YORK STATE EDUCATION DEPARTMENT, Bureau of Program Development, 1061 Education Building Annex, Albany, New York 12234 — Phone: 518-474-2251

DEPARTMENT OF PUBLIC INSTRUCTION, Edenton & Salisbury Streets, Raleigh, North Carolina 27611 — Phone: 919-733-6081

DEPARTMENT OF PUBLIC INSTRUCTION, State Capitol, Bismarck, North Dakota 58505 — Phone: 701-224-2279

RESOURCE CENTER FOR THE VISUALLY HANDICAPPED, 470 East Glenmont Avenue, Columbus, Ohio 43214 — Phone: 614-262-4545 or 614-262-6131

OKLAHOMA STATE DEPARTMENT OF PUBLIC INSTRUCTION, 2500 North Lincoln Boulevard, Room 382, Oklahoma City, Oklahoma 73105 — Phone: 405-521-3361

OREGON STATE DEPARTMENT OF EDUCATION, 942 Lancaster Drive, Northeast, Salem, Oregon 97310 — Phone: 503-378-3820

PENNSYLVANIA DEPARTMENT OF EDUCATION, 4400 Franklin Street, Harrisburg, Pennsylvania 17111 — Phone: 717-783-3238

RHODE ISLAND DEPARTMENT OF EDUCATION, Roger Williams Building, 22 Hayes Street, Providence, Rhode Island 02908 — Phone: 401-277-2825

SOUTH CAROLINA DEPARTMENT OF EDUCATION, 1429 Senate Street/307 Rutledge Building, Columbia, South Carolina 29201 — Phone: 803-758-7432

SOUTH DAKOTA STATE LIBRARY, Handicapped Services Program, State Library Building, Pierre, South Dakota 57501 — Phone: 605-773-3514

STATE DEPARTMENT OF EDUCATION, 103 Cordell Hull Building, Nashville, Tennessee 37219 — Phone: 615-741-2851

TEXAS EDUCATION AGENCY, Division of Special Education, 201 East 11th Street, Austin, Texas 78701 — Phone: 512-475-3507

UTAH STATE BOARD OF EDUCATION, c/o Utah School for the Blind, 742 Harrison Boulevard, Ogden, Utah 84404 — Phone: 801-399-5635

VERMONT STATE DEPARTMENT OF EDUCATION, 347 Prospect Street, Barre, Vermont 05641 — Phone: 802-479-2786

VIRGINIA STATE DEPARTMENT OF EDUCATION, c/o Virginia Department for the Visually Handicapped, 1402 Overbrook Road, Richmond, Virginia 23220 — Phone: 804-257-6570

WASHINGTON STATE DEPARTMENT OF PUBLIC INSTRUCTION, Clover Park Schools, 10020 Gravelly Lake Drive, S.W., Tacoma, Washington 98499 — Phone: 206-756-9523

WEST VIRGINIA DEPARTMENT OF EDUCATION, Capitol Complex, Building #6, Room B-315, Charleston, West Virginia 25305 — Phone: 304-348-8830

WISCONSIN STATE DEPARTMENT OF PUBLIC INSTRUCTION, Division for Handicapped Children, 125 South Webster Street, Madison, Wisconsin 53702 — Phone: 608-266-3522

WYOMING STATE DEPARTMENT OF EDUCATION, Hathaway Building, Cheyenne, Wyoming 82002 — Phone: 307-777-7279 or 7256

DISTRICT OF COLUMBIA PUBLIC SCHOOLS, Tyler School, 10th and G Street, Southeast, Washington, D.C. 20020 — Phone: 202-727-3984

PUERTO RICO DEPARTMENT OF EDUCATION, Teniente Cesar Gonzalez, Box 759, Hato Rey, Puerto Rico 00919 — Phone: 809-764-8059

SOURCES OF MATERIALS FOR THE VISUALLY HANDICAPPED

by
W. Buck Schrotberger

As state and federal laws are requiring more and more visually handicapped students to be educated in the neighborhood schools, several problems have been intensified in attempts to fully utilize the potential of the local school program in educating visually handicapped children. One of the greatest problems has been in providing materials transcribed into the media which the student can utilize. These materials must duplicate in content the materials used by sighted classmates. In the past, the teacher, a highly skilled professional, has often spent a disproportionate amount of time on sourcing, acquisition and preparation of the special materials needed.

ASSOCIATION OF INSTRUCTIONAL RESOURCE CENTERS FOR THE VISUALLY HANDICAPPED

Many states have recognized this need and have organized a state center to act in coordination of resources and materials in private and public, national, state, and local agencies for visually handicapped students in that state.

First contact should be to the state education agency or its counterpart to determine if the state offers such a central materials coordinating service. Individual states which provide a statewide service for the coordination of special materials used by visually handicapped students are:

Alaska Blind/Visually Impaired Program
429 "D" Street, Suite 306
Anchorage, Alaska 95501
907-279-4534

The Foundation for Blind Children
1201 North 85th Place
Scottsdale, Arizona 85257
602-947-3744

Clearing House Depository for Handicapped Students
721 Capitol Mall
Sacramento, California 95814
916-445-5103

Colorado IMC for the Visually Handicapped
1362 Lincoln Street
Denver, Colorado 80203
303-866-2181

Division for the Visually Impaired
305 West 8th Street
Wilmington, Delaware 19801

Florida Instructional Materials Center
5002 North Lois Avenue
Tampa, Florida 33614
803-876-5016

Services for the Visually Impaired
444 West Reynolds
Springfield, Illinois 62702
217-525-3300

Library and Depository for Visually Impaired and Blind
4558 North Hydraulic
Wichita, Kansas 67219

Media Center for the Visually Impaired
Pine at Maple Street
Lansing, Michigan 48913
517-373-9628

Communication Center
1745 University Avenue
St. Paul, Minnesota 55104
612-296-6723

Nebraska School for the Visually Handicapped
10th Street and 10th Avenue
Nebraska City, Nebraska 68410

New Hampshire Instructional Materials Center for the Visually Handicapped
3 Bud Way
Nashua, New Hampshire 03063

New Jersey Commission for the
Blind
Textbook and Materials Center
1100 Raymond Boulevard
Newark, New Jersey 07102
201-648-2547

New Mexico School for the
Visually Handicapped
1900 North White Sands
Alamogordo, New Mexico 88310
505-437-3505

Ohio Resource Center for Low
Incidence and Severely Handicapped
470 Glenmont Avenue
Columbus, Ohio 43214
614-262-6131

Oregon Textbook and Media Center
for the Visually Handicapped
P.O. Box 3107
Portland, Oregon 97208
503-249-2000, ext. 568

Pennsylvania Materials Center
for the Visually Handicapped
4400 Franklin Street
Harrisburg, Pennsylvania 17111
717-564-1876

Texas Education Agency
Division of Services for the
Visually Handicapped
201 East 11th Street
Austin, Texas 78701
512-475-3507

Virginia Commission for the
Visually Handicapped
1402 Overbrook Road
Richmond, Virginia 23220
804-264-3145

Special Education Materials
Clearinghouse and Depository
10020 Gravelly Lake Drive, SW
Tacoma, Washington 98499
206-756-8517

Professional Services Center
1700 West State Street
Janesville, Wisconsin 53545

Acquisition of Materials

Primary objectives in obtaining materials for visually handicapped students are first to acquire the specific materials or equipment in the shortest amount of time. Secondly, this material or equipment should be provided or prepared within the system which prevents needless duplication of special materials at numerous locations throughout the country.

To meet these objectives in the shortest amount of time, the following sources should be the initial step taken in attempts to locate a specific item.

Braille, Large Print, and Recorded Textbooks

1. **The Central Catalog of Volunteer and Commercially Produced Textbooks,** IMRC, American Printing House for the Blind. This 's the catalog of all textbooks that have been transcribed into braille, large type, and recording editions. The catalog number for the 12th edition, 1981, is #7-2175 and the price is $40.00.
2. **APH Catalogs,** American Printing House for the Blind. Catalogs are available on request for textbooks in braille, large type, cassette tapes, and disc recordings. Also, catalogs for braille music and magazines, talking books and magazines, and educational aids are available.
3. **Educational Aids for Visually Handicapped,** Instructional Materials Reference Center, American Printing House for the Blind.

The last step will be arranging for the hand transcription of a specific textbook (transcription will be discussed in the next section). Before initiating that final step of hand transcription, there are several sources which should be contacted. In catalogs which list books prepared in special media, there will always be additional titles which have been completed since the catalogs were published. In effect, a catalog of the type is always out-of-date.

For this reason it is particularly important to establish contact with the agency to verify the information of a current listing in a catalog and to be aware of additional titles which have been completed since the most recent printing of the catalog.

The next major area for locating and acquiring necessary materials should involve selectively contacting the following agencies for availability.

Braille

American Printing House for the Blind 1839 Frankfort Avenue Louisville, Kentucky 40206	National organization for the production of literature and the manufacture of educational aids for visually handicapped
Braille Circulating Library 2700 Stuart Avenue Richmond, Virginia 23220	Lends devotional, evangelistic, juvenile, biographical, fiction and psychology
Braille Institute of America, Inc. 741 North Vermont Avenue Los Angeles, California 90029	Publishes books and magazines in braille
Christian Record Braille Foundation, Inc. 4444 S. 52nd Street Lincoln, Nebraska 68506	Publishes books and magazines for all age levels in braille. Operates free lending library
Clovernook Printing House for the Blind 7000 Hamilton Avenue Cincinnati, Ohio 45231	Prints braille books, magazines, catalogs, and other publications for national organizations
Howe Press of Perkins School for the Blind 175 North Beacon Street Watertown, Massachusetts 02172	Manufactures and sells braille-vision books
Jewish Braille Institute of America 110 East Thirtieth Street New York, New York 10016	Publishes elementary and secondary level textbooks in braille and maintains circulating braille library
Lutheran Braille Workers, Inc. 11735 Peach Tree Circle Yucaipa, California 92399	Provides religious and educational materials in braille in English and 16 other languages
Lutheran Library for the Blind 3558 South Jefferson Avenue St. Louis, Missouri 63118	Operates free lending library of braille materials
National Braille Association Braille Book Bank 422 South Clinton Avenue Rochester, New York 14620	Will furnish — at prices substantially less than the cost of the materials — thermoformed copies of hand-transcribed braille textbooks for blind students beyond the high school level
Braille Technical Tables Bank 2100 N. Woodward Avenue Apt. #108 Royal Oak, Michigan 48073	A service of National Braille Association provided under same criteria as NBA Braille Book Bank

National Braille Press, Inc. 88 St. Stephen Street Boston, Massachusetts 02115	Provides literary and music braille transcriptions, priority to high school and college
Swedenborg Foundation 139 East Twenty-Third Street New York, New York 10010	Provides braille editions of Emanuel Swedenborg's writings and related works
Volunteer Services for the Blind, Inc. 919 Walnut Street Philadelphia, Pennsylvania 19107	Provides material in braille to blind students, business and professional
Xavier Society for the Blind 154 East Twenty-Third Street New York, New York 10010	Maintains free lending library of hand-transcribed braille books of a primarily but not exclusively religious nature
Jewish Guild for the Blind 1880 Broadway New York, New York 10023	Braille textbooks provided
National Library Service Division for the Blind and Physically Handicapped Library of Congress 1291 Taylor St., N.W. Washington, D.C. 20542	Maintains listings of general books in its Union Catalog of Hand-Copied Books

A brief word should be added here relative to the different braille codes used. These are:

1. Literary: as found in most magazines, newspapers, and books other than textbooks in mathematics and science.
2. Mathematics and science: referred to as Nemeth Code.
3. Foreign language.
4. Music notation: which does not employ a staff.
5. Textbook format: in such unique representations as glossaries, outlines, footnotes, color coding, blanks to be filled in, underlining, boxed material, etc.

Large Print

Until recently, large print books were not readily available, and many of those available were of poor quality.

Numerous groups have recently organized to hand transcribe large print books. This will be further discussed in the section on transcription.

Most of the large print books presently available are produced through a photographic enlargement process. Most are of a standard 8½″ × 11″ page size although some may be as large as 22″ × 17″. The page size of the reproduced copy should be checked before making any commitment. Primarily, this is because a 22″ × 17″ enlargement is impractical for use by a first or second grade student.

It should also be remembered that the quality of the photographic enlargement will only be as good as the master being photographed. This is particularly apparent in enlarged illustrations.

The following sources should be selectively contacted before arranging for hand transcription.

American Printing House for the Blind 1839 Frankfort Avenue Louisville, Kentucky 40206	National organization for the production of literature and the manufacture of educational aids for visually handicapped
Christian Record Braille Foundation, Inc. 4444 South Fifty-Second St. Lincoln, Nebraska 68506	Publishes books and magazines for all age levels in large print

Jewish Braille Institute of America, Inc. 110 East Thirtieth Street New York, New York 10016	Maintains circulating large type library
Lutheran Braille Workers, Inc. 11735 Peach Tree Circle Yucaipa, California 92399	Provides religious and educational materials in large print in English and 16 other languages
Lutheran Library for the Blind 3558 South Jefferson Avenue St. Louis, Missouri 63118	Operates free lending library of materials in large print
G.K. Hall 70 Lincoln St. Boston, Massachusetts 02111	Large type, recreational, textbooks
Thorndike Press One Mile Road Thorndike, Maine 04986	Recreational
Stanwix House 3020 Chartiers Ave. Pittsburgh, Pennsylvania 15204	Textbooks
Ulverscroft Large Print Books Oscar B. Stiskin P.O. Box 3055 Stamford, Connecticut 06905	Recreational
American Bible Society 1865 Broadway New York, New York 10023	Bibles and religious literature
Microfilm Company of California Library Reproduction Service 1977 S. Los Angeles St. Los Angeles, California 90011	Microfilm enlargement, catalog available
Volunteer Transcribing Services 617 Oregon Avenue San Mateo, California 94402	Microfilm enlargement, catalog available
St. Martin's Press 175 Fifth Avenue New York, New York 10010	Recreational
National Association for the Visually Handicapped, Inc. 3201 Balboa Street San Francisco, California 94121	Produces and distributes large print (18 pt.) reading materials on request

National Braille Press, Inc. 88 St. Stephen Street Boston, Massachusetts 02115	Provides, on request, large print materials
Xavier Society for the Blind 154 East Twenty-Third Street New York, New York 10010	Maintains free lending library of hand-transcribed large type books of primarily, but not exclusively religious materials.

Recorded Materials

1. **Talking Books and Cassette Books**

Talking book is the name for the special long-playing phonograph record. The talking book is played on a talking book machine or approved record player.

The cassette book has been recently made available in addition to the cassette playback units for using the cassette books. Cassette books are generally the same titles available on talking books.

Cassette players, cassette books, talking books, and talking book machines, in addition to some braille and large print titles, are available from the regional library for the blind or the Library of Congress. They are available on loan without charge to the residents of the United States.

Books are primarily recreational reading rather than textbook materials but include everything from recent novels, humor, handcrafts, cookbooks to classics, biographies, and science.

STATE	LIBRARY SERVICES
Alabama	Alabama Regional Library for the Blind and Physically Handicapped Alabama Public Library Service State of Alabama Montgomery, Alabama 36130 205-277-7330
Alaska	Alaska State Library Services for the Blind and Physically Handicapped 650 West International Airport Road Anchorage, Alaska 99502 907-274-6625
Arizona	Arizona Regional Library for the Blind and Physically Handicapped 3120 East Roosevelt Street Phoenix, Arizona 85008 602-255-5578
Arkansas	Library for the Blind and Physically Handicapped MAC Building, One Capitol Mall Little Rock, Arkansas 72201 501-371-1155
California (1) Northern Monterey, Kings, Tulare and Inyo Counties and North	Books for the Blind and Physically Handicapped California State Library 600 Broadway Sacramento, California 95818 916-322-4090

California (2) Southern San Luis Obispo, Kern and San Bernardino Counties and South	Braille Institute of America, Inc. Library 741 North Vermont Avenue Los Angeles, California 90029 213-663-1111
Colorado	Colorado State Library — Services for the Blind and Physically Handicapped 1313 Sherman Street Denver, Colorado 80203 303-866-2081
Connecticut	Connecticut State Library Library for the Blind and Physically Handicapped 90 Washington Street Hartford, Connecticut 06106 203-566-3028
Delaware	Special Services Unit Delaware Division of Libraries 215 Dover Street Dover, Delaware 19901 302-736-4523
District of Columbia	District of Columbia Regional Library for the Blind and Physically Handicapped 901 G. Street, N.W., Room 215 Washington, DC 20001 202-727-2142
Florida	Florida Regional Library for the Blind and Physically Handicapped P.O. Box 2299 Daytona Beach, Florida 32015 904-252-4722
Georgia	Library for the Blind and Physically Handicapped 1050 Murphy Avenue, S.W. Atlanta, Georgia 30310 404-656-2465
Hawaii	Library for the Blind and Physically Handicapped 402 Kapahulu Avenue Honolulu, Hawaii 96815 808-732-7767
Idaho	Blind and Physically Handicapped Library Idaho State Library 325 West State Street Boise, Idaho 83702 208-334-2117

Illinois	Illinois Regional Library for the Blind and Physically Handicapped 1055 West Roosevelt Road Chicago, Illinois 60608 312-738-9210
Indiana	Indiana State Library Blind and Physically Handicapped Division 140 North Senate Avenue Indianapolis, Indiana 46204 317-232-3684
Iowa	Iowa Commission for the Blind 4th and Keosauqua Des Moines, Iowa 50309 515-283-2601
Kansas	Kansas State Library Division for the Blind and Physically Handicapped 529 Kansas Avenue Topeka, Kansas 66603 913-296-3642
Kentucky	Kentucky Library for the Blind and Physically Handicapped Twilight Trail, Building C P.O. Box 818 Frankfort, Kentucky 40602 502-564-5532
Louisiana	Louisiana State Library Department for the Blind and Physically Handicapped P.O. Box 131 Baton Rouge, Louisiana 70821 502-342-4942/342-4943
Maine	Maine State Library Library Services for the Handicapped State House Station 64 Augusta, Maine 04333 207-289-3950/289-3959
Maryland	Maryland State Library for the Blind and Physically Handicapped 1715 North Charles Street Baltimore, Maryland 21201 301-659-2668/659-2669
Massachusetts	Regional Library for the Blind and Physically Handicapped Perkins School for the Blind 175 North Beacon Street Watertown, Massachusetts 02172 617-924-3434, ext. 240

Michigan (1) Wayne County	Wayne County Library for the Blind and Physically Handicapped 33030 Van Born Road Wayne, Michigan 48184 313-274-2600
Michigan (2) Entire State (except for Wayne County)	Blind and Physically Handicapped Library Michigan Department of Education State Library Services P.O. Box 30007 Lansing, Michigan 48909 517-373-1590
Minnesota	Library for the Blind and Physically Handicapped Braille and Sight Saving School Faribault, Minnesota 55021 507-332-3279
Mississippi	Mississippi Library Commission Service for the Handicapped P.O. Box 3260 Jackson, Mississippi 39207 601-354-7208
Missouri	Wolfner Memorial Library for the Blind and Physically Handicapped 1808 Washington Avenue St. Louis, Missouri 63103 314-241-4227
Montana	Montana State Library Division for the Blind and Physically Handicapped 930 East Lyndale Avenue Helena, Montana 59601 406-449-3004
Nebraska	Nebraska Library Commission Library for the Blind and Physically Handicapped 1420 P Street Lincoln, Nebraska 68508 402-471-2045
Nevada	Nevada State Library Special Services Division Capitol Complex Carson City, Nevada 89710 702-885-5155
New Hampshire	New Hampshire Library Services for the Handicapped 17 South Fruit Street Concord, New Hampshire 03301 603-271-3429

New Jersey	New Jersey Library for the Blind and Handicapped 1676 North Olden Avenue Trenton, New Jersey 08638 609-292-6450
New Mexico	New Mexico State Library for the Blind and Physically Handicapped Box 1629 Sante Fe, New Mexico 87503 505-827-2033
New York (1) New York City and Long Island	Library for the Blind and Physically Handicapped The New York Public Library 166 Avenue of the Americas New York, New York 10013 212-925-1011
New York State (2)	New York State Library for the Blind and Visually Handicapped Cultural Education Center Empire State Plaza Albany, New York 12230 518-474-5935
North Carolina	North Carolina Library for the Blind and Physically Handicapped Department of Cultural Resources 1811 North Boulevard Raleigh, North Carolina 27635 919-733-4376
North Dakota	South Dakota State Library for the Handicapped State Library Building Pierre, South Dakota 57501 605-773-3514
Ohio (1) Northern, including Columbus	Library for the Blind and Physically Handicapped Cleveland Public Library 325 Superior Avenue Cleveland, Ohio 44114 216-623-2911
Ohio (2) Southern South of Columbus	Library for the Blind and Physically Handicapped 444 West Third Street Cincinnati, Ohio 45202 513-369-6074/369-6075
Oklahoma	Oklahoma Library for the Blind and Physically Handicapped 1108 N.E. 36 Oklahoma City, Oklahoma 73111 405-521-3514/521-3832

Oregon	Oregon State Library Services for the Blind and Physically Handicapped 555 13th Street, NE Salem, Oregon 97301 503-378-3849
Pennsylvania (1) Eastern: Bradford, Lycoming, Northumberland, Juniata, Perry, Comberland, York Counties and East	Library for the Blind and Physically Handicapped Free Library of Philadelphia 919 Walnut Street Philadelphia, Pennsylvania 19107 215-925-3213
Pennsylvania (2) Western: Tioga, Clinton, Union, Snyder, Mifflin, Huntingdon, Franklin, Adams Counties and West	Library for the Blind and Physically Handicapped Carnegie Library of Pittsburgh 4724 Baum Boulevard Pittsburgh, Pennsylvania 15213 412-687-2440
Rhode Island	Regional Library for the Blind and Physically Handicapped Rhode Island Department of State Library Services 95 Davis Street Providence, Rhode Island 02908 401-277-2726
South Carolina	South Carolina Regional Library Division for the Blind and Physically Handicapped 700 Knox Abbott Drive Cayce, South Carolina 29033 803-758-2726
South Dakota	South Dakota State Library for the Handicapped State Library Building Pierre, South Dakota 57501 605-773-3514
Tennessee	Tennessee Regional Library for the Blind and Physically Handicapped 729 Church Street Nashville, Tennessee 37203 615-741-3915
Texas	Division for the Blind and Physically Handicapped Texas State Library P.O. Box 12927, Capitol Station Austin, Texas 78711 512-475-4758
Utah	Utah State Library Commission Division for the Blind and Physically Handicapped 2150 South 300 West, Suite #16 Salt Lake City, Utah 84115 801-533-5855

Vermont	Vermont Library for the Blind and Physically Handicapped State of Vermont Department of Libraries Montpelier, Vermont 05602 802-828-3273
Virgin Islands	Virgin Islands Regional Library for the Blind and Physically Handicapped Box 390 St. Thomas, Virgin Islands 00801 809-774-6770
Virginia	Virginia State Library for the Visually and the Physically Handicapped 1901 Roane Street Richmond, Virginia 23222 804-786-8016
Washington	Washington Regional Library for the Blind and Physically Handicapped 811 Harrison Street Seattle, Washington 98129 206-464-6930
West Virginia	West Virginia Library Commission Services for the Blind and Physically Handicapped Science and Cultural Center Greenbrier and Washington Streets Charleston, West Virginia 25305 304-348-4061
Wisconsin	Wisconsin Regional Library for the Blind and Physically Handicapped 814 West Wisconsin Avenue Milwaukee, Wisconsin 53233 414-278-3045
Wyoming	Utah State Library Commission Division for the Blind and Physically Handicapped 2150 South 300 West, Suite #16 Salt Lake City, Utah 84115 801-533-5855
Territory and Possessions: Guam	Guam Territorial Library for the Blind and Physically Handicapped Nieves M. Flores Memorial Library P.O. Box 652 Agana, Guam 96910 671-472-6417

Puerto Rico	Puerto Rico Regional Library for the Blind and Physically Handicapped Center for Occupational Training Building 520 Ponce de Leon Avenue, Stop 8 1/2 Puerta de Tierra, San Juan, Puerto Rico 00901 809-723-2519
All other territories or possessions receive service from:	National Library Service for the Blind and Physically Handicapped Library of Congress 1291 Taylor Street, N.W. Washington, DC 20542 202-287-5100

2. **Tape Recorded Textbooks**

Most tape recorded textbooks are recorded on 5-inch or 7-inch reels, four track, at a speed of 1 7/8 or 3 3/4 inches per second (ips). The best single source for tape recorded textbooks is:

Recording for the Blind, Inc. (RFB) 215 East Fifty-Eighth Street New York, New York 10022	Lends taped educational books at no charge to visually and physically handicapped school, college and graduate students. Recording done at 25 centers across the U.S.

Other agencies which should be selectively contacted for availability are:

American Printing House for the Blind 1839 Frankfort Avenue Louisville, Kentucky 40206	Cassette tape catalog Textbooks and nontext material
Christian Record Braille Foundation, Inc. 4444 South Fifty-Second Street Lincoln, Nebraska 68506	Publishes books and magazines for all age levels on tape — religious
Xavier Society for the Blind 154 East Twenty-Third Street New York, New York 10010	Maintains free lending library of taped books of a primarily, but not exclusively religious nature

Recordings are of the following types:

A. Disc recording — usually referred to as a phonograph record or a talking book. The length of playing time on one side of the disc is governed by the diameter of the circle, by the recording speed expressed in revolutions per minute, and by the pitch, namely, the number of grooves per inch. This last might be thought analogous to a page of typewritten material. Although the size of the sheet is constant (8½ × 11 inches), the typing itself may be triple-, double-, or single-spaced or be bulletin type, primary type, pica, or elite in size. The Division for the Blind and Physically Handicapped of the Library of Congress, in preparing materials for its network of libraries, records much of its work on ten-inch discs with a very slow speed, 8⅓ revolutions per minute (rpm). Faster speeds used by the Division are 16⅔ and 33⅓ rpm. At the slowest speed, a ten-inch disc provides approximately two hours of listening time per side.

B. Reel to reel (open reel) — with a maximum size of seven-inch reels. The amount of tape on a reel is governed by the size of reel used and the thickness of the tape. Quality tape is thicker, resulting in longer usefulness with less breakage and tangling. The amount of listening time is determined by the size of reel, length of tape expressed in feet, the number of tracks employed, and the recording speed used. A common practice today involves a four-track tape recorded at 1 7/8 inches per second (ips) or even 15/16 ips. Playback equipment must possess the capability of and compatability with the above-named parameters. For instance, a two-track machine cannot play a four-track tape

without presenting two tracks simultaneously. When purchasing or borrowing machines and tapes, the parameters involved should be determined in advance.

C. Cassettes — a form of tape recording, require a different type of recording machine and playback machine. Recording for the Blind, Inc., an organization that specializes in textbook material, is converting to four-track cassettes as announced in a letter in April, 1974. Therefore, the borrower of such cassettes must have playback equipment capable of playing four tracks separately.

Educational Aids

There is no way to give the specialist a ready-made list of aids to meet all the needs. The use made of the sources of aids is the key to providing appropriate educational materials and aids which can be used to improve and strengthen instructional programs for visually handicapped students.

Low vision aids, magnifiers, furniture, equipment, materials, special manuals and other aids for teaching and learning must be constantly sought as new aids and devices are constantly being developed and marketed.

American Printing House for the Blind 1839 Frankfort Avenue Louisville, Kentucky 40206	*Educational Aids Catalog* — items produced by APH in categories of aids for geography, handwriting, music, spelling, mobility, low vision, pre-school and mathematics. Also, equipment for braille writing and tape recording
American Foundation for the Blind 15 West 16th Street New York, New York 10011	*International Catalog of Aids and Appliances for Blind and Visually Impaired Persons, 1973* — special devices or aids and appliances for the blind from around the world, *Directory of Agencies Serving the Visually Handicapped in the United States* — 18th Edition
Independent Living Aids, Inc. 11 Commercial Court Plainview, New York 11803	Aids and appliances for the Blind and Visually Impaired

Other agencies which produce educational aids for visually handicapped include:

Howe Press of Perkins School for the Blind 175 North Beacon Street Watertown, Massachusetts 02172	Manufactures and sells braille writing equipment and math aids, maps, paper, etc.
Science for the Blind Products Box 385 Wayne, Pennsylvania 19087	Distributes instruments and aids, some for use in technical and scientific work
Touch Aids 1049 Redondo Way Hemet, California 92343	

Hand Transcribed Materials

The book needed should be checked thoroughly with agencies throughout the country. If the reference sources stated in previous sections of this chapter are used, the findings will be ninety percent accurate. If a book is not listed, it has not been done, usually.

Next, preparations to have the textbook transcribed into the appropriate media must be made. Regular inkprint copies of the textbooks to be transcribed must be obtained. Generally, at least two copies of the inkprint, one copy for the transcriber and one copy for the proofreader are needed. Some agencies or transcription groups require three regular inkprint copies.

If there is no access to a braille transcriber, large print transcriber, or tape recording group, the best source for identifying transcribers is *Volunteers Who Produce Books — Braille, Large Print, Tape.* Division for The Blind and Physically Handicapped, Library of Congress, Washington, D.C., 1973 Edition.

Regardless of the media, several steps must be followed in assuring effective volunteer production efforts of textbooks for the visually handicapped.

1. **Copyright permission —** Publishers have been generous in providing free copyright permission to transcribers of materials for visually handicapped readers. In return for this, proper procedures should be followed before beginning the transcription. The American Printing House for the Blind has negotiated blanket permission from a number of publishers for the transcriptions of any of their titles into braille and recorded form. Copies of the lists are available on request from APH. In all cases, copyright permission before beginning a transcription is necessary.
2. **APH Central Catalog —** *The Central Catalog of Volunteer Produced Textbooks* maintained in card-file form by the Instructional Materials Reference Center is a vital source of information for all individuals who have a need for materials in braille, large type, disc, and tape recorded form. This catalog is published in limited numbers annually.

Its purpose is twofold: (a) to coordinate the reporting efforts of the volunteer production of literature for the visually handicapped and provide reference service for those needing such materials; and (b) to provide permissions and record clearances from publishers through blanket agreements extended by them.

The Central Catalog's file of Intention Reports includes all titles which have been reported to the IMRC as in process, whether they are textbooks or fiction and supplementary reading.

A few minutes spent in carrying out the following steps can save hours of unnecessary transcribing and make full use of previous transcription:

1. Check to see if the book is already available.
2. Satisfy copyright requirements.
3. Notify IMRC/APH regarding process of transcribing.
   a. File **Intention —** APH will send a notice if another group or agency has completed or is in process of transcribing the book.
   b. Send **Completion —** so others may be aware transcribing of the text has been done; it should be returned as soon as transcription is completed.
4. IMRC/APH should be advised **immediately** concerning changes in status of transcriptions to keep information in the Central Catalog current and accurate. (address given above)

Braille Transcribing

A braillist must be certified by either the Library of Congress or by an organization authorized to grant certification. To insure the volunteer service program functions with maximum efficiency, educators must assure the responsibility of anticipating textbook needs far in advance.

It is believed every school district which has a program for visually handicapped children should have the services of volunteer transcribers. Some districts have had success with hiring paid transcribers, thereby eliminating problems imposed by additional responsibilities of volunteer workers.

Volunteers rightly deserve the consideration of not being asked to duplicate the efforts of another transcriber. This becomes even more significant when it is realized that over 600 hours are required to transcribe an average high school textbook into braille.

When the need for hand transcription has been confirmed, the following booklet is an absolute necessity: *Code of Braille Textbook Formats and Techniques, 1965.* (Revised in 1966, 1970, 1972) American Printing House for the Blind, Louisville, Kentucky.

Large Type Transcribing

Modern techniques for the duplication of large type and the sophisticated network for borrowing these books now makes uniform standards and transcribing procedures essential. To this end, the National Braille Association has prepared standards and procedures titled: *NBA Manual for Large Type Transcribing, 1973,* National Braille Association, New Jersey. Copies available from Library of Congress, Division for Blind and Physically Handicapped, 1921 Taylor Street, N.W., Washington, D.C. 20542

Standardized format is imperative when it is considered over 300 hours are required to transcribe an average high school textbook into large type.

Tape Recording

It is estimated an average high school textbook requires over 90 hours to record on tape. Specific instructions have been prepared in selection of a recording room, operating the tape recorder, preparing the tape, labeling, and other topics relating to specific instructions for recording. These instructions are available in:
Tape Recording: A Manual for the Recording of Educational Materials, 1971, National Braille Association, 85 Godwin Avenue, Midland Park, New Jersey 07432

References

Central Catalog, The, IMRC, American Printing House for the Blind, Louisville, KY, 1973.

Code of Braille Textbook Formats and Techniques, American Printing House for the Blind, Louisville, KY, 1965.

Commercial Aids That May be Used or Adapted for Visually Handicapped, IMRC, American Printing House for the Blind, Louisville, KY, 1969.

De Garmo, Mary Turner, *Introduction to Braille Music Transcription,* Music Services Unit, Division for the Blind and Physically Handicapped, Library of Congress, Washington, D.C., 1970.

Directory of Agencies Serving the Visually Handicapped in the United States, 18th Edition, American Foundation for the Blind, New York, 1973.

Educational Aids for Visually Handicapped, Second Edition, IMRC, American Printing House for the Blind, Louisville, KY, 1971.

NBA Manual for Large Type Transcribing, National Braille Association, Inc., Midland Park, NJ, 1973.

Tape Recording: A Manual For the Recording of Educational Materials, National Braille Association, Inc., Midland Park, NJ, 1971.

Volunteers Who Produce Books: Braille, Large Type, Tape, Division for the Blind and Physically Handicapped, Library of Congress, Washington, D.C., 1970.

THE EYE REPORT POINTS THE WAY

by
Amie L. Dennison
(Mrs. D.A. Dennison)

The purpose of this section is to aid the special teacher in making the most efficient use of the information found in an eye report. First the teacher needs to recognize the report for what it is — a communication from a professional to a professional. It contains confidential information. It is the record of what could be determined at the time of the eye examination, either from medical examination or from history taking. It is at least one underlying reason for special services being needed for one individual student. It is a listing of part of the essential materials with which a student has to build a life.

Secondly, a teacher needs to recognize the eye report for what it is not. Its limitations must be known. The report is only as good as the interest and knowledge of each of the professionals who handles it. It is not a news/gossip column. It cannot be assumed to be a sealed foreordaining prophesy in today's world of science. It is not a clue to services needed by *all* students. It is not the architectural design for an individual's entire life.

The above mean that the special teacher is going to use the Eye Report to do the most efficient planning with and for each visually handicapped student for whom there is some responsibility whether *total* (as in a self-contained service area) or *minimal* (as in a teacher/consultant service). It is hoped that this section can be of some help. However each special teacher will want to continue collecting source material. It is suggested that additional source material be sought regularly so that interest and information can be kept current.

Eye reports vary from a scribbled Rx pad slip to multi-paged, single-spaced, highly technical forms. However, a few (5) basic things seem to be required in planning educational placement and a program of service. The visual acuity (with and without glasses), the Rx being worn, etiology, diagnosis, prognosis will give the special teacher basics with which to work. Near visual acuity and a field chart are very helpful additions. From the very technical forms used in some areas, many other items can be learned if the eye specialist does in fact have and takes the time for them. A charted field is seldom included unless it has special significance, as in glaucoma in adults.

However, knowledgeable interpretation of the five basics given above can support the plans for serving the special needs of a visually handicapped student. Let us analyze these as the special teacher might do when studying the Eye Report. (Each item is interpreted in light of one or more of the individual student's vital statistics; i.e., age, sex, parents, siblings.)

Visual Acuity — Given usually in Snellen notation, 20/20 is considered 100% or "perfect" vision and means that the individual being checked sees at 20 feet what (according to norms) should be seen at 20 feet. 20/200 means that the individual sees at 20 feet what others are able to see at 200 feet. Such vision (or less) when in the better eye after the best correction is considered Legal Blindness, not to be misinterpreted to mean educational blindness or social blindness. Among other things, Legal Blindness means that a student is eligible for "quota" funds. Quota eligibility immediately has significance for the special teacher. It means that educational materials distributed by the American Printing House for the Blind can be purchased through the quota funds.

Perhaps the visual acuity is in the very low range; i.e., 8/400. The special teacher probably begins to have concerns regarding educational planning. Shall the student function with print or will another medium for learning be required?

Frequently, the difference made by the corrective lens prescribed by the eye specialist is a clue, though not always. If no corrective lens is given it does suggest that the central vision cannot be improved. However some individuals manage to function rather effectively with extreme low acuity while others seem not capable of functioning even though possessing much better acuity. In such cases, the special teacher must make a decision as to what medium or combination of media will serve the student best.

The amount of correction achieved is significant to the special teacher. Particularly when studied in conjunction with the strength of the prescribed lens, the correction achieved can have significance in working with the handicapped individual student. For example, if vision of H.M. can be corrected to 20/200 with a minus ten diopter lens it is reasonable to expect the individual to wear the prescription with little resistance. If, however, vision of 20/400 can be corrected only to 16/300 with a plus eleven diopters the possibilities of belligerent resistance are great.

Rx Being Worn — This item of information is frequently the one least appreciated by the special teacher. Yet, if its basic principles are understood it is not difficult to interpret and it can serve in several capacities:

a. It may supply additional information; i.e., if the eye specialist gives an incomplete diagnosis, the Rx will complete the refractive diagnosis. (Myopia might be the diagnosis and the Rx indicate the condition is compound myopia or a prism symbol will indicate a latent muscle imbalance which may not be mentioned.)
b. It serves as a check and balance against other items, i.e., if the prognosis is given as "stable," comparison of the Rx with that of other years will be a reinforcement or a refutation; if the prognosis is given as "grave," comparison of the Rx's of several dates will indicate how "grave" the progress currently is.
c. Third, the prescription considered with other items can aid the special teacher in better understanding problems related to wearing the prescribed glasses, restricted fields of vision, and distance required for critical visual tasks.

Prescriptions Which May Be Found on the Eye Report

The outline given below is an oversimplification of the combinations possible and are given only as a review (or introduction) for the special teacher who wishes to be alert to the refractive errors which can be recognized from the written prescription:

Samples of Possible Rx's:

Myopia	-12.25 D. (Indicates rather high nearsightedness.)
Compound Myopia	-12.00 ⌒ -.75 cyl. x 90° (The added cylindrical on a meridian indicates astigmatism with the rule.)
*** Hyperopia**	+6.00 D. (Farsightedness, strong enough to give symptoms of eye fatigue.)
Compound Hyperopia	+6.00 ⌒ +.75 x 15° (Added correction on a meridian is cylindrical and is for astigmatism with the rule.)
***Post Cataract**	Usually requires a *high* plus lens (+9.00 or more) unless the cataractous lens was removed from a myopic eye. If the eye were corrected with a -15.00 D. before surgery for cataract, the refraction might become a -4.00 D.; if it had been -7.00 D., it might be changed to a +4.00 D. for the aphakic eye.
Myopic Astigmatism	-2.50 x 90° (Only a cylindrical correction, no spherical correction.)
Hyperopic Astigmatism	+1.75 cyl. × 75° (Cylindrical correction only.)
Mixed Astigmatism	-2.50 +1.25 x 75° (Combination of spherical correction and cylindrical +2.50 -1.25 x 75° correction against the rule.)

The above are very basic. Specialists have many ways of indicating corrections. The prism for muscle imbalance is shown with a small △

Diagnosis — The description of what is being dealt with is essential. Few would question the need for this item. Yet, there is great disparity in the accounts given for it. Incompleteness seems to be the greatest problem. For example, the eye specialist (in this case, the oculist) may very well give only myopia as a diagnosis when in fact the eye condition that presents the greater problems during "school days" may well be night blindness which is part of the larger and more inclusive diagnosis of retinitis pigmentosa or primary pigmentary degeneration. The myopia may be of little consequence in the academic setting for which the special teacher will be planning. The night blindness, on the other hand, may be presenting insurmountable problems to the visually handicapped student without any teacher (or parent) knowing the condition exists. (Some additional conditions are discussed briefly in terms of the author's experience with visually handicapped students. The section appears under the heading, "Some of the More Frequently Encountered Eye Conditions.")

Etiology — The why (origin) of the eye condition gives some input for age of onset and inheritance. Frequently a few words, perhaps one word, in this item is the best clue a special teacher has in attempting to work with the visually handicapped student and the family of such an individual. "Inherited" carries its own flag! Generally, a feeling of guilt rides "piggy-back!" "Congenital" frequently has the same traumatic effect. If an accident was the cause, who caused the accident! If the eye condition is systemic disease related, is the systemic disease, "in the family!"

Prognosis — Expected progress or ultimate development of the eye condition. This is not the item on which a decision as to the medium of choice is made. No longer is the time and energy of a seeing student wasted in learning to "do by *not looking.*" Prognosis is, however, *one* consideration in planning current activities, in counseling for in-school choices, and for thinking through long-term career expectations and life styles. For example, assume that a student had a diagnosis of primary pigmentary degeneration and a record of retinal detachment in one eye along with "grave" as a prognosis. No time would be spent in learning braille or in learning to function tactually. However, activities of a strenuous nature might be guarded against and career planning might check the alternatives *if* a second retinal detachment occurred.

Some of the More Frequently Encountered Eye Conditions

ALBINISM: - The albino is easily recognized because of the lack of pigment. Frequently there is nystagmus, in which case the teacher will understand that extremely close eye work, such as tracing, cannot be performed accurately. Generally there is considerably reduced visual acuity. Formerly, it was assumed that all albinos would require braille. Just the opposite is the first assumption today. The albino has photophobia, extreme sensitivity to light, which accounts for squinting and rather peculiar facial expressions. Tinted lenses may be prescribed to relieve the discomfort. Frequently a correction does not improve the albino's visual acuity, but the comfort of the tinted lenses plus the improvement in facial expression, certainly may justify the wearing of glasses. For some unexplained reason the albino seems to run to extremes in personality. Fortunately, s(he) is most frequently a neat, orderly and immaculate individual.

ANOPHTHALMOS: - The absence of a true eyeball or a very rudimentary mass may entail some of the problems associated with wearing a prosthesis. Teachers and/or attending adults become involved in this care and routine. Frequently cleansing and placing the prosthesis, and care of the orbit are part of the training required during the school day. Educationally, the individual is not capable of functioning with any form of visual media unless by some rare circumstance, one eye were developed. In that event, the functioning would be as one with monocular vision.

ANIRIDIA: - The absence of a true iris which may occur with other congenital abnormalities such as cataract and/or dislocated lens. Glaucoma frequently develops before school years are ended. Normal reactions (adaptations and responses) are impossible. Visual functioning may vary from day to day. (See also: Dislocated Lens, Cataract, and Glaucoma.)

APHAKIA: - The absence of the lens of the eye usually is due to surgery for cataract. In rare cases it is a part of the abnormally small eye (microphthalmos). Convex (plus, +) lenses are worn to provide refractive power lost because of the absence of the lens. Plus lenses of high power (+7.00 D. and up) make the eyes look larger when worn in spectacles. Secondly, a great and immediate improvement in vision does not always occur, may never do so if the congenital cataract filled the pupillary area and was not removed early enough. The extremely heavy refractions are difficult to keep in adjustment and in place on the face. Lightweight lenses in spectacle frames are helping. The use of contact lenses for some of the needed power is promising. With these, the aphakic individual finds it easier to use much weaker "adds" for close work.

CATARACT (CONGENITAL): - Much of congenital cataract is hereditary but many are a part of rubella's ravages. Generally bilateral, they may occur in only one eye. Congenital cataract is of two types, according to its location in relation to the pupil. A nuclear or central cataract is in the center of the pupil. In a bright light the pupil is contracted; thus, light rays cannot penetrate. In less light the pupil becomes larger, leaving around the cataract a space through which light rays may penetrate. Therefore a student with central or nuclear cataract does not want to sit in the place of brightest illumination. But a cataract in the rim or periphery of the pupil is another story. A contracted

pupil closes out the cataract and takes away the attendant blurring. When there is a bright light, its rays reflect against the cataractous opacities and cast too much uncomfortable glare on the retina. Often a student with this type of cataract shades the eyes to see best. Those having congenital cataract are usually nervous, often showing a dislike for doctors, anesthesias and hospitals. This may be traced to the early surgical procedures performed when they were very young. Often the student is sensitive about the thick glasses and much concerned over the fact that the glasses make the eyes look very large. Since congenital cataract is an inherited difficulty, this attitude may be a reflection of the family's attitude toward glasses.

CATARACT (ADVENTITIOUS): - Cataracts which are acquired in an outside, accidental circumstance generally would not make a previously normally seeing individual become an individual who needed to be educated as a visually handicapped person. A penetrating wound probably would involve only one eye. In that event the resultant vision would be considered normal. However, a period of adjustment to monocular vision might require work with the special teacher. Radiation, on the other hand, might result in aphakia with the need for the strong convex (plus, +) lenses. There would not be the additional problem of poorly developed central vision as is true after the removal of lenses which had been fully cataractous from birth; but, a temporary adjustment period plus guidance would be needed probably.

COLOBOMA: - A cleft or hole in some portion of the eye may or may not cause serious impairment to visual functioning. If the coloboma is at 6 o'clock and in the iris only, it may be little noticed. However, if the cleft extends back through the entire eye (even into the brain) there may be a serious loss of functioning, visually and mentally.

CORNEAL OPACITIES: - No matter what the cause, corneal opacities are difficult to deal with in total functioning. Even though a great loss may not be indicated when visual acuity is checked, the opacities frequently interfere with efficient activity. For example, an individual might read regular-size print, jump rope, play basketball — *but* walk into a hanging tree limb and do further damage to the cornea. Learning to cautiously observe and guard against hazards which present a thin silhouette is especially needed.

GLAUCOMA: - Infantile or Congenital glaucoma is caused by abnormal development of the eye during the period before birth and control of the intraocular pressure must be begun soon after birth. Surgery and/or treatment may save considerable vision. However, the eye may be damaged by much enlargement and destruction of tissue (buphthalmos). Sufficient central vision may be retained for academic needs. Frequently, the corrective lenses worn (or the conditions of the eye itself) result in sensitivity to light. Almost certainly there will be loss of side (peripheral) vision. This means that caution to prevent accidents is a necessity. Some feel that atmospheric conditions and weather changes make a difference in visual efficiency. Other conditions such as aniridia and dislocated lenses are frequently associated with congenital glaucoma.

MICROPHTHALMOS: - One or both eyes are markedly smaller than normal. Frequently other ocular abnormalities are present (e.g., cataract, glaucoma, aniridia, coloboma). Vision is very low. Glasses may not be prescribed because of the poor correction gained. Use of vision must be encouraged and motivated continuously, because it is neither satisfying nor easy to struggle with visual tasks needed to improve visual efficiency.

NYSTAGMUS: - The involuntary movement of the eyes is associated with many other eye conditions and is almost without exception an indication that there is poor visual acuity. The searching movement increases when the visual task becomes more acute and tends to become more quiet when no visual task is being attempted. Improved correction, when possible, quiets the movement usually. The teacher knows that nystagmus precludes sustained, clear, accurate vision. However, for nystagmus alone adjustment of curriculum, procedures and schedule are not considered. Conditions with which the nystagmus is associated may dictate otherwise.

OPTIC NERVE and PATHWAY DISORDERS: - Atrophy, infectious disease, injury, growths, degeneration, genetic, prenatal — whatever the cause, two factors influence how the visually handicapped student and the special teacher will work together. The *site* or where interference occurs as a result of the disorder is the single most important factor as regards functioning. Grossly divided into areas:

1) A lesion in one side of the retina would cause a loss in only one side of one eye;
2) A growth between the eye and the optic chiasm would affect total vision of that eye only;
3) A lesion at the chiasm would cause the outer half of each eye's field to be blocked; and,
4) Trouble behind the chiasm would affect vision in both eyes in a specific pattern according to the location (site) of the trouble.

Each visual task needs to be analyzed in relation to the known area of visual loss. For example, if there is a loss of the right half of the visual field, reading is much more affected than if the left half were the area of loss. Normally, in reading print, the eye moves ahead toward the right from the left, but this visual movement is impeded when there is a "right homonymous hemianopsia" due to a lesion on the left occipital lobe.

The matter of central vs. field (peripheral) vision is very evident in optic nerve disorders. If central vision is lost, academics present a problem; if peripheral vision is lost, physical activities (even the simple act of getting from "here" to "there") are curtailed and/or hazardous. With either loss, social problems are almost insurmountable. Frequently, glasses are no help and the eyes give no evidence of injury or insult. Therefore, a normal performance (in all areas) is expected of the individual who does not have the vision to perform. An object dropped or misplaced is total disaster unless orderly management and skill in listening have been carefully learned. Unawareness of others, clumsy movements, volunteering and then not being able to perform, "getting lost in a telephone booth" — all attach to those who have no side vision. The special teacher can give guidance to the visually handicapped student in such areas so that s(he) learns; 1) to recognize limitations (not driving a car because it would be hazardous to others); 2) to make the best use of all clues (sounds, landmarks); 3) to organize, plan, and remember for increasing efficiency; and, 4) to assume the responsibility for helping others gain a realistic understanding of the visual problem, not waiting for a teacher, fellow-student, or others to guess at what makes "that crazy kid act like that."

The second factor which relates to the student/teacher work is the matter of whether the condition is stable or progressive. (See the section above on PROGNOSIS.)

The Three R's

The three R's that come to mind in the area of visual disorders are Retinoblastoma, Retrolental Fibroplasia, and Rubella. Each very different in every respect except two or perhaps three: 1) they have caused terrible damage; 2) they have defied the medical world and confused the educational world; and, 3) they are being understood and controlled, we hope. In all three, the special teacher needs to keep up on what is happening.

RETINOBLASTOMA: - Formerly called glioma of the retina, this condition frequently results in enucleation of one or both globes. New treatments are offering some hopeful developments. Genetic factors and guidance are the problems to be met and dealt with.

RETROLENTAL FIBROPLASIA (RLF): - Misnamed because of lack of understanding of what was happening. From the first description to the discovery of the cause took little more than a decade but accounted for a dramatic increase in the numbers of the blind enrolled in schools. Numbers have now subsided and stabilized at a minimum.

RUBELLA: - Multihandicapped children from mothers who were victims of the recurring epidemics of German measles. Many victims are being evaluated. Many teachers are attempting to find ways to use those evaluations to plan a useful future. Much is being written.

The Refractive Errors

The refractive errors are the most simple to understand when they are simple refractive errors. Descriptions of some characteristic patterns follow. However, the special teacher cannot overlook the fact that refractive errors are only a part of a whole complex problem or syndrome in a high percentage of cases seen in special programs. As was mentioned previously, myopia is not just myopia when it is a part of Primary Pigmentary Degeneration, involving night blindness, restricted field, and genetic factors which must be considered as the visually handicapped student matures. Each phase of the complex problem must be dealt with.

ASTIGMATISM: - This refractive error creates additional problems when added to either myopia or hyperopia. Having glasses well adjusted is especially important. If a correction is for the 90° meridian, it should not be worn at some other meridian! Good quality lighting and an additional quantity of it is usually appreciated by the student who is struggling to make the irregularities of astigmatism come into focus.

MYOPIA: - The myopic or nearsighted student usually wears glasses without much urging. S(he) realizes that they make the eyes look smaller, but s(he) sees so much more with the correction than without it that s(he) chooses to wear the glasses and see. School work is no problem to the myope. There is no particular strain, since s(he) is able to work for extended periods at close range. S(he) may have a tendency to study or read to the exclusion of outdoor interests and activities. If so, s(he) needs to be encouraged to establish interests or hobbies that will involve the outdoors. The nearsighted student is apt to stoop and acquire a very poor posture. This can be obviated by consistent use of book rests or adjustable desk-tops. S(he) should learn to do the adjusting automatically.

The teacher should not take responsibility for allowing myopes to participate in physical exercise which involves heavy lifting, possibility of severe body blows, or head injuries, since the danger of retinal detachment is great. Only when the oculist definitely gives permission should the high myope be allowed to participate in such activities. Walking and swimming (without diving) may be undertaken safely.

HYPEROPIA: - The hyperopic or farsighted student is the one most apt to be overlooked. Even when the eye condition is recognized, this handicap is often misunderstood. Several misconceptions arise from trying to compare the myopic with the hyperopic eye. Since a myope often sees clearly at close range, it is expected that a hyperope will see clearly at distance. This is not a true picture. The farsighted student does not necessarily see well at a distance. If s(he) does, it is at the expense of excessive accommodation. The normal eye is at rest when seeing an object at a distance of 20 feet or more. Not so with the hyperopic eye; it must accommodate continuously. This results in fatigue and restlessness. Thus the hyperopic student may not be studious and may have a short attention span. Realizing this the teacher will obtain best results if only short periods of close eye work are assigned with frequent intervals of rest.

Aids to Visual Functioning

Once the eye report of the visually handicapped student has been reviewed, the special teacher needs to think in terms of *functionina* vision. Functionally vision is either central or peripheral.

Central Vision (or macula vision) provides color discrimination and allows critical or sharp (exact) seeing tasks. Reading, whether at close or at a distance is a central vision task. This is the vision which is attended when corrective lenses are prescribed. When the macula is not developed sufficiently (as in total cataract) or is deteriorated (as in macula degeneration) corrective lenses are of no value. Seldom can acuity be better than 20/200 if macula or central vision is lost. With this problem a student may wear no glasses, appear to see normally and not be able to do any critical visual task.

Peripheral vision which provides awareness of movement and serves in dim light is vital for mobility. Without peripheral vision, the student is literally "lost in a telephone booth." More important is the fact that with only the tubular vision left and the periphery lost many social skills are major handicapping hazards.

Seldom does the special teacher work with a totally blind student. It is important that the teacher observe carefully in all situations to determine if the visually handicapped student is efficient in the use of all visual potentials. Even if more than one medium is used, there is every reason to exercise and utilize as efficiently as possible all visual capability, for whatever task possible. If regular size print is not used, then large print or a magnifier or both should be used. If a magnifier is of no value at close range, perhaps a telescope has merit for distance. If one type low vision aid does not work for a given need, another may. The supply of aids continues to expand and no individual can afford to miss an opportunity.

Occasionally, the special teacher is not familiar with "cross-referencing" in determining information on a given magnifier. Suggestions, concepts, and tables are included to assist. Encouraging each visually handicapped student to assume the responsibility for finding what is useful in any given situation is an important part of the special teacher's role. The following guide should be of general assistance in enabling the specialist to operate more effectively in this regard.

Guide to Selecting Optical Aids

Vision	Lighthouse Guide NYL CODE	Diopters	IMRC/APH Extension Magnification	Focal Length
20/40-20/60	A	3-6 D.	up to 1.5X	12-6 inches
20/70-20/100	B	7-10 D.	1.75X-2.50X	6-4 inches
20/100-20/200	C	10-20 D.	2.5X-4X	4-2.5 inches
20/200-20/400	D	20-40 D.	5X-8X	2.5-1 inch
Below 20/400	E	40-80 D.	10X-20X	0.5 inch or less

The New York Lighthouse gives a "Guide to Selecting Optical Aids" in its Catalog. Each symbol used in its Code relates the visual acuity range to the number of diopters needed to read a*verage* print. (Dr. Gerald Fonda defines *standard* type as 8 pt. to 12 pt.) Dr. Fonda and others feel there "is a strong argument for designating the power of a magnifying lens as the equivalent or true dioptric power." However, in our listing, we have extended the NYL Guide, adding power or magnification and the approximate focal length for devices. The chart above summarizes the information attempted.

Counseling

The information found on the Eye Report is Private and Confidential. It is studied, used and protected by the special teacher as planning and working with the visually handicapped student progresses. There comes a time when that confidential information should become the possession of the student whose life it influences. Frequently, the special teacher is the one best qualified to counsel with the student regarding the eye condition which may be a major concern and influence in the life of the student. Care, honesty, and maintaining an open relationship and environment are the keys. When a student asks for information, generally the answer is known already or is suspected. Confirmation and frank discussion are really what is wanted. If a student asks why the eye doctor does not recommend corrective lenses, the chances are very good that the student already knows that glasses cannot correct vision that is not there. When an adolescent student mentions the fact that an older brother has a son who is already wearing glasses, too, it is very probable that the student is concerned about the inheritance factor associated with the eye condition which the special teacher first noted on the student's eye report!

The following is the reproduction of a very complete eye report produced through the efforts of the National Society for the Prevention of Blindness. It provides excellent frames of reference both for the eye specialist being requested to complete it and for those who would be expected to use the completed form.

CHILDREN WITH OTHER THAN USUAL VISION OFTEN POSE PROBLEMS FOR EDUCATORS. An infarmative repart can da much ta resalve these by interpreting the acular difficulty in terms that can be applied ta the schaal situatian.

A changing and enlightened philasaphy na langer segregates the child with less than narmal visian, nar daes it believe that he shauld be treated as an "eye cripple." It is na langer believed that ane saves sight by canserving it; instead, eye wark is encouraged because it has been faund ta result in greater praficiency. The visual task is na langer made easier with special larger print if the smaller print can be read with camparative camfart. It accentuates the pasitive, the visian the child has, rather than stressing the visual lack. It recagnizes that same children will need special educatianal services.

Much superstitian, idle talk, and autdated ideas abaut the eyes still exist ta canfuse the educatars. Far example, reading in bed daes nat make ane's eyes weak. Reading in paar light in itself may nat be camfartable, but it will nat cause arganic eye changes, and there are enaugh saund reasans far candemning lang periads af televisian watching than ta threaten it will ruin the eyes.

This repart farm is suggested as a tangible means far the transmissian, in understandable terms, af the visual patential af the student and as a saurce af infarmatian necessary far classificatian purpases.

Albert E. Slaane, M.D., *Chairman*
N.S.P.B. Cammittee an Visian Screening

PUPILS WITH SEVERE VISION PROBLEMS AFTER CORRECTION ARE EDUCATED EITHER IN RESIDENTIAL OR DAY SCHOOLS.

When day schaal placement is appropriate, they are part af the regular class pragram. Any needed additianal educatian services are pravided by a specially trained teacher, special materials and equipment.

Thase wha functian with visian are encauraged, by all appropriate means, ta use their visian ta its fullest capacity. Law visian aids will benefit same.

The eye report is used by schaal administratars and special teachers ta assist in the determinatian af:

1. the pupil's educatianal needs
2. the type af educatianal placement
3. educatianal planning and curriculum adaptatian
4. the need far large type print
5. the need far braille
6. pupils ta be reparted as legally blind ta the American Printing Hause far the Blind ta qualify far baaks and equipment.

CONFIDENTIAL

EYE REPORT FOR CHILDREN WITH VISUAL PROBLEMS

RLB

NAME OF PUPIL (Type or print) _____ (First) _____ (Middle) _____ (Last) SEX _____ RACE _____

ADDRESS _____ (No. and street) (City or town) (County) (State) DATE OF BIRTH _____ (Month) (Day) (Year)

GRADE _____ SCHOOL _____ ADDRESS _____

I. HISTORY

A. Probable age of onset of vision impairment. Right eye (O.D.) _____ Left eye (O.S.) _____

B. Severe ocular infections, injuries, operations, if any, with age at time of occurrence _____

C. Has pupil's ocular condition occurred in any blood relative(s)? _____ If so, what relationship(s)? _____

II. MEASUREMENTS

(See back of form for preferred notation for recording visual acuity and table of approximate equivalents.)

A. VISUAL ACUITY

	DISTANT VISION			NEAR VISION			PRESCRIPTION		
	Without correction	With best correction*	With low vision aid	Without correction	With best correction*	With low vision aid	Sph.	Cyl.	Axis
Right eye (O.D.)									
Left eye (O.S.)									
Both eyes (O.U.)							Date		

B. If glasses are to be worn, were safety lenses prescribed in: Plastic _____ Tempered glass _____ *with ordinary lenses

C. If low vision aid is prescribed, specify type and recommendations for use. _____

D. FIELD OF VISION: Is there a limitation? _____ If so, record results of test on chart on back of form.

What is the widest diameter (in degrees) of remaining visual field? O.D. _____ O.S. _____

E. Is there impaired color perception? _____ If so, for what color(s)? _____

III. CAUSE OF BLINDNESS OR VISION IMPAIRMENT

A. Present ocular condition(s) responsible for vision impairment. (If more than one, specify all but underline the one which probably first caused severe vision impairment.)
O.D. _____
O.S. _____

B. Preceding ocular condition, if any, which led to present condition, or the underlined condition, specified in A.
O.D. _____
O.S. _____

C. Etiology (underlying cause) of ocular condition primarily responsible for vision impairment. (e.g., specific disease, injury, poisoning, heredity or other prenatal influence.)
O.D. _____
O.S. _____

D. If etiology is injury or poisoning, indicate circumstances and kind of object or poison involved. _____

IV. PROGNOSIS AND RECOMMENDATIONS

A. Is pupil's vision impairment considered to be: Stable _____ Deteriorating _____ Capable of improvement _____ Uncertain _____

B. What treatment is recommended, if any? _____

C. When is reexamination recommended? _____

D. Glasses: Not needed _____ To be worn constantly _____ For close work only _____ Other (specify) _____

E. Lighting requirements: Average _____ Better than average _____ Less than average _____

F. Use of eyes: Unlimited _____ Limited, as follows: _____

G. Physical activity: Unrestricted _____ Restricted, as follows: _____

TO BE FORWARDED BY EXAMINER TO:

Date of examination _____

Signature of examiner _____ Degree _____

Address _____

If clinic case: Number _____ Name of clinic _____

PREFERRED VISUAL ACUITY NOTATIONS

DISTANT VISION. Use Snellen notation with test distance of 20 feet. (Examples: 20/100, 20/60). Far acuities less than 20/200 record distance at which 200 foot letter can be recognized as numerator of fraction and 200 as denominator. (Examples: 10/200, 3/200). If the 200 foot letter is not recognized at 1 foot record abbreviation for best distant vision as follows:

HM	HAND MOVEMENTS
PLL	PERCEIVES AND LOCALIZES LIGHT IN ONE OR MORE QUADRANTS
LP	PERCEIVES BUT DOES NOT LOCALIZE LIGHT
No LP	NO LIGHT PERCEPTION

NEAR VISION. Use standard A.M.A. notatian and specify best distance at which pupil can read. (Example: 14/70 at 5 in.)

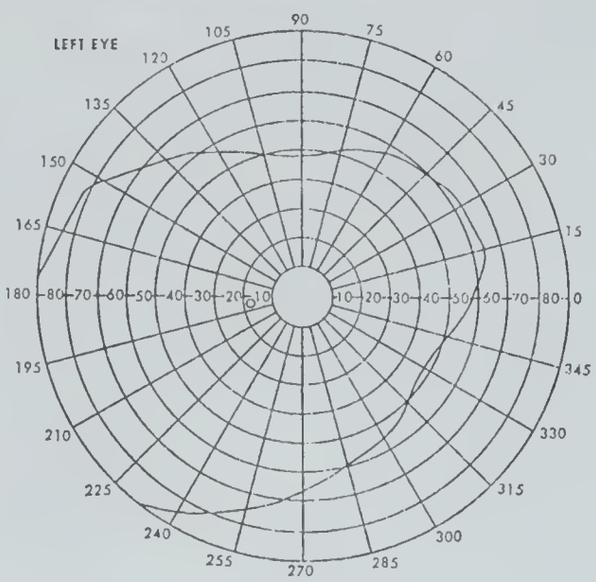
TABLE OF APPROXIMATE EQUIVALENT VISUAL ACUITY NOTATIONS

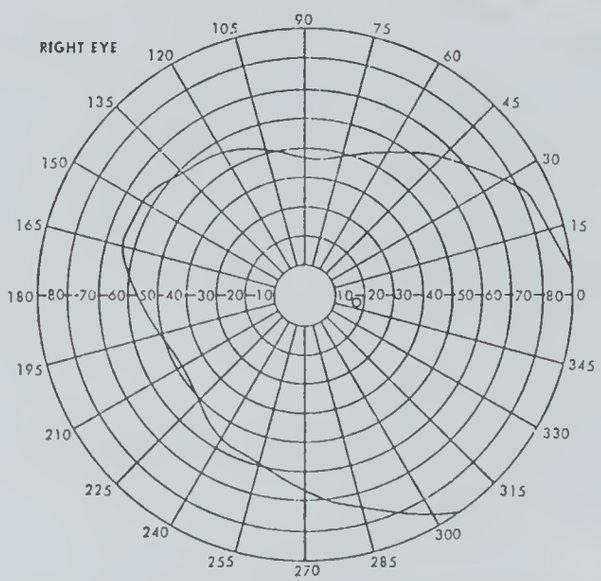
These notations serve only as an indication of the appraximate relationship between recordings of distant and near vision and paint type sizes. The teacher will find in practice that the pupil's reading performance may vary considerably from the equivalents shown.

Distant Snellen	*Near*			*% Central Visual Efficiency far Near*	*Point*	*Usual Type Text Size*
	A.M.A.	*Jaeger*	*Metric*			
20/20 (ft.)	14/14 (in.)	1	0.37 (M.)	100	3	Mail order catalogue
20/30	14/21	2	0.50	95	5	Want ads
20/40	14/28	4	0.75	90	6	Telephane directary
20/50	14/35	6	0.87	50	8	Newspaper text
20/60	14/42	8	1.00	40	9	Adult text books
20/80	14/56	10	1.50	20	12	Children's books 9-12 yrs
20/100	14/70	11	1.75	15	14	Children's books 8-9 yrs.
20/120	14/84	12	2.00	10	18	Large type text
20/200	14/140	17	3.50	2	24	
12.5/200	14/224	19	6.00	1.5		
8/200	14/336	20	8.00	1		
5/200	14/560					
3/200	14/900					

FIELD OF VISION. Record results on chart below.

Type of test used:_____ Illumination in ft. candles:_____





Test object: Calar(s)_____ Size(s)_____

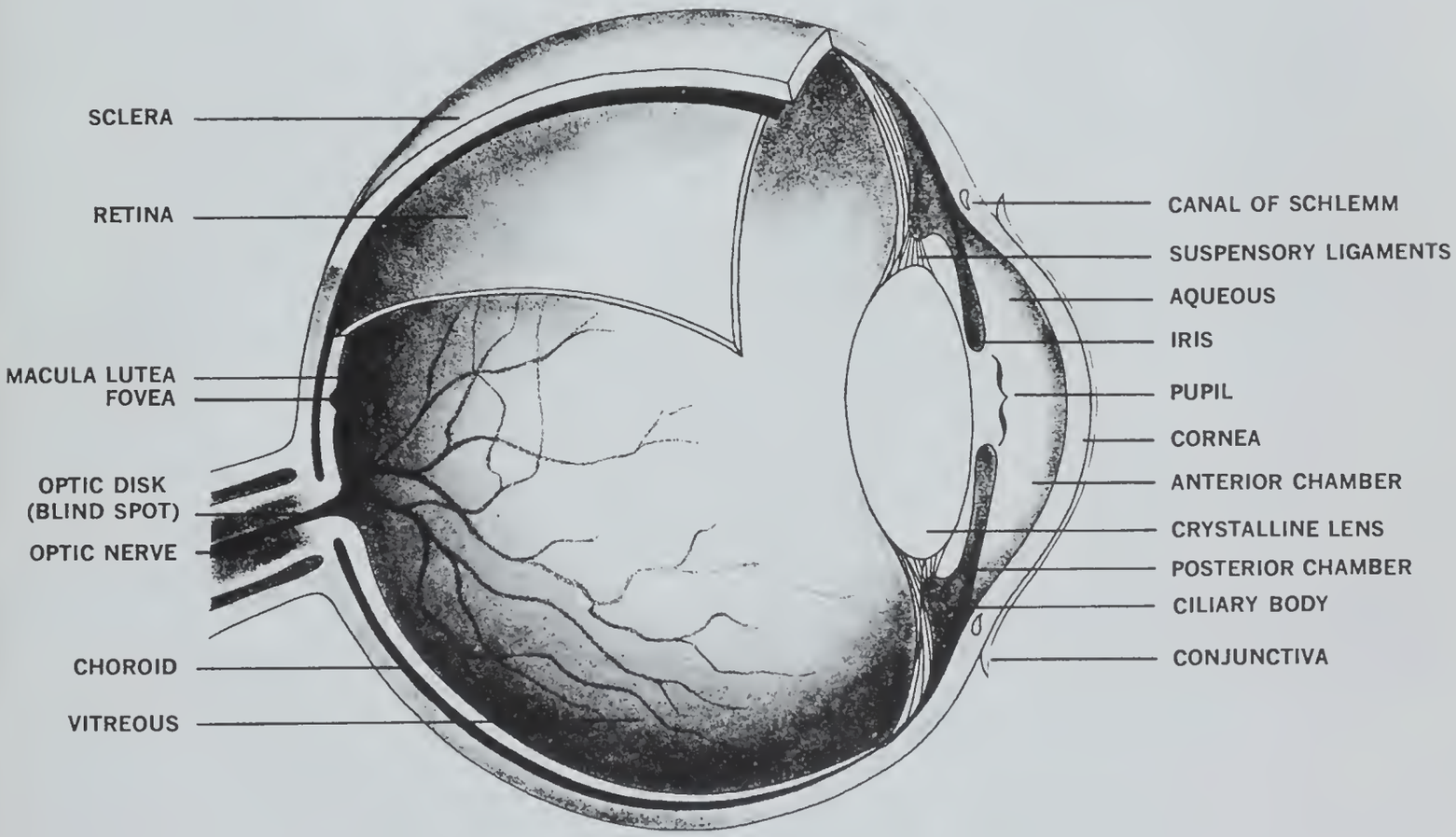
Distance(s):_____

Test object: Colar(s)_____ Size(s)_____

Distance(s):_____

Stat 4 Rev/665/20M National Society for the Prevention of Blindness, 16 East 40th Street, New York, N.Y. 10016

The following is the drawing of a cross-section of an eye which will serve to review basic anatomy of the eye itself. This cross-section is reproduced from Publication V-7 from the National Society for the Prevention of Blindness.



Vocabulary of Terms Relating to the Eye

Accommodation	The adjustment of the eye for seeing at different distances, accomplished by changing the shape of the Crystalline lens through action of the ciliary muscle, thus focusing a clear image on the retina.
Albinism	An hereditary loss of pigment in the iris, skin, and hair; usually associated with lowered visual acuity, nystagmus and photophobia and often accompanied by refractive errors.
Amblyopia	Dimness of vision without any apparent disease of the eye.
Amblyopia Ex Anopsia	Dimness of vision due to disuse of the eye.
Ametropia	A refractive error in which the eye when in a state of rest does not focus the image of an object upon the retina; includes hyperopia, myopia, and astigmatism. (See also: Refractive Error.)
Aniridia	Congenital absence of the iris.
Aniseikonia	A condition in which the ocular image of an object as seen by one eye differs in size or shape from that seen by the other eye.
Anophthalmos	Absence of a true eyeball.
Anterior Chamber	Space in the front of the eye, bounded in front by the cornea and behind by the iris; filled with aqueous.
Aphakia	Absence of the lens of the eye.
Aqueous (Aqueous Humor)	Clear, watery fluid which fills the anterior and posterior chambers within the front part of the eye.
Asthenopia	Eye fatigue caused by tiring of the internal or external muscles.
Astigmatism	Refractive error which prevents the light rays from coming to a single focus on the retina because of different degrees of refraction in the various meridians of the eye.
Binocular Vision	The ability to use the two eyes simultaneously to focus on the same object and to fuse the two images into a single image which gives a correct interpretation of its solidity and its position in space.
Blepharitis	Inflammation of the margin of the eyelids.
Blindness	In the United States, the legal definition of blindness is: central visual acuity of 20/200 or less in the better eye after correction; or visual acuity of more than 20/200 if there is a field defect in which the widest diameter of the visual field subtends an angle distance no greater than 20 degrees.
Buphthalmos	Large eyeball in infants — generally due to glaucoma.
C, CC (Cum Correction)	With correction; wearing prescribed lenses.
Canal of Schlemm	A circular canal situated at the juncture of the sclera and cornea through which the aqueous is excreted after it has circulated between the lens and the iris and between the iris and the cornea.
Canthus	The angle at either end of the slit between the eyelids; specified as outer, or temporal, and inner, or nasal.
Cataract	A condition in which the Cyrstalline lens of the eye, or its capsule, or both, become opaque.
Central Visual Acuity	Ability of the eye to perceive the shape of objects in the direct line of vision.
Chalazion	Inflammatory enlargement of a Meibomian gland in the eyelid.
Chorioretinitis	Inflammation of the choroid and retina.
Choroid	The vascular, intermediate coat which furnishes nourishment to the other parts of the eyeball.
Ciliary Body	Portion of the vascular coat between the iris and the choroid. It consists of ciliary processes and the ciliary muscle. (See also: Uveal Tract.)
Coloboma	Congenital cleft due to the failure of the eye to complete growth in the part affected.
Color Deficiency	Diminished ability to perceive differences in color — usually for red or green, rarely for blue or yellow.
Concave Lens	Lens having the power to diverge rays of light; also known as diverging, reducing, negative, myopic, or minus lens, denoted by the sign - .

Cones and Rods Two kinds of cells which form a layer of the retina and act as light-receiving media. Cones are concerned with visual acuity and color discrimination; rods, with motion and vision at low degrees of illumination (night vision).

Congenital Present at birth.

Conjunctiva Mucous membrane which lines the eyelids and covers the front part of the eyeball.

Convergence The process of directing the visual axes of the two eyes to a near point, with the result that the pupils of the two eyes are closer together. The eyes are turned inward.

Convex Lens Lens having power to converge rays of light and to bring them to a focus; also known as converging, magnifying, hyperopic, or plus lens, denoted by sign +.

Cornea Clear, transparent portion of the outer coat of eyeball forming front of aqueous chamber.

Corneal Graft Operation to restore vision by replacing a section of opaque cornea with transparent cornea.

Crystalline Lens A transparent, colorless body suspended in the front of the eyeball, between the aqueous and the vitreous, the function of which is to bring the rays of light to a focus on the retina.

Cycloplegic A drug that temporarily puts the ciliary muscle at rest and dilates the pupil; often used to ascertain the error of refraction.

Cylindrical Lens A segment of a cylinder, the refractive power of which varies in different meridians; used in the correction of astigmatism.

Dacryocystitis Inflammation of lacrimal sac.

Dark Adaptation The ability of the retina and pupil to adjust to a dim light.

Depth Perception The ability to perceive the solidity of objects and their relative position in space.

Diopter Unit of measurement of strength or refractive power of lenses.

Diplopia The seeing of one object as two.

Dyslexia Inability to read which is apparently due to a neurological problem.

Emmetropia The refractive condition of the normal eye. When the eye is at rest, the image of distant objects is brought to a focus on the retina.

Endophthalmitis Inflammation of most of the internal tissue of the eyeball.

Entropion A turning inward of the eyelid.

Enucleation Complete surgical removal of the eyeball.

Esophoria A tendency of the eye to turn inward.

Esotropia A manifest turning inward of the eye (convergent strabismus or crossed eye).

Exophoria A tendency of the eye to turn outward.

Exophthalmos Abnormal protrusion of the eyeball.

Exotropia Abnormal turning outward from the nose of one or both eyes (divergent strabismus).

Extrinsic Muscles External muscles of the eye which move the eyeball. Each eye has four rectus and two oblique muscles.

Eye Dominance Tendency of one eye to assume the major function of seeing, being assisted by the less dominant eye.

Eye Grounds See Fundus.

Field of Vision The entire area which can be seen without shifting the gaze.

Floaters Small particles consisting of cells or fibrin which move in the vitreous.

Focus Point to which rays are converged after passing through a lens; focal distance is the distance rays travel after refraction before focus is reached.

Fornix A loose fold of the conjunctiva where the part covering the eyeball meets the conjunctiva lining of the eyelid.

Fovea Small depression in the retina at the back of the eye; the part of the macula adapted for most acute vision.

Fundus The back of the eye which can be seen with an ophthalmoscope.

Fusion The power of coordinating the images received by the two eyes into a single mental image.

Glaucoma Increased pressure inside the eye; "hardening of the eyeball," caused by accumulation of aqueous fluid in the front portion.

Glioma Malignant tumor of the retina. (See also: Retinoblastoma.)

Hemianopsia Blindness of one-half the field of vision of one or both eyes.

Heterophoria A constant tendency of the eyes to deviate from the normal position for binocular fixation, counterbalanced by simultaneous fixation forced by muscular effort (prompted by the desire for single binocular vision). Deviation is not usually apparent, in which case it is said to be latent.

Heterotropia An obvious or manifest deviation of the visual axis of an eye out of alignment with the other eye. (See also: Strabismus.)

Hyperopia, Hypermetropia A refractive error in which, because the eyeball is short or the refractive power of the lens weak, the point of focus for rays of light from distant objects (parallel light rays) is behind the retina; thus, accommodation to increase the refractive power of the lens is necessary for distant as well as near vision.

Hyperphoria A tendency of one eye to deviate upward.

Hypertropia A deviation upward of one of the visual axes.

Injection A term sometimes used to mean congestion of ciliary or conjunctival blood vessels, redness of the eye.

Interstitial Keratitis Affection of the middle layer of the cornea; disease, found chiefly in children and young adults, is usually caused by transmission of syphilis from mother to unborn child.

Iridocyclitis Inflammation of the iris and ciliary body.

Iris Colored, circular membrane, suspended behind the cornea and immediately in front of the lens. The iris regulates the amount of light entering the eye by changing the size of the pupil.

Iritis Inflammation of the iris; the condition is marked by pain, inflammation, discomfort from light, contraction of pupil, discoloration of iris. It may be caused by injury, syphilis, rheumatism, gonorrhea, tuberculosis, etc.

Isihara Color Plates A test for defects in recognizing colors, based on the ability to trace patterns in a series of multicolored charts.

Jaeger Test A test for near vision; lines of reading matter printed in a series of various sizes of type.

Keratoconus Cone-shaped deformity of the cornea.

Keratoplasty See Corneal Graft.

Lacrimal Gland A gland which secretes tears; it lies in the outer angle of the orbit.

Lacrimal Sac The dilated upper end of the lacrimal duct.

Lagophthalmos A condition in which the lids cannot be completely closed.

Lens A refractive medium having one or both surfaces curved.

Light Perception (L.P.) Ability to distinguish light from dark.

Limbus Boundary between cornea and sclera.

Macrophthalmos Abnormally large eyball, resulting chiefly from infantile glaucoma.

Macula Lutea ("Yellow Spot") The small avascular area of the retina that surrounds the fovea and with the fovea comprises the area of distinct vision.

Megalophthalmos Abnormally large eyeball present at birth (congenital).

Microphthalmos Abnormally small eyeball present at birth (congenital).

Miotic A drug that causes the pupil to contract.

Mydriatic A drug that dilates the pupil.

Myopia (Nearsightedness) A refractive error in which, because the eyeball is too long in relation to its focusing power, the point of focus for rays of light from distant objects (parallel light rays) is in front of the retina. Thus, to obtain distinct vision, the object must be brought nearer to take advantage of divergent light rays (those from objects less than 20 feet away).

Near Point of Convergence The nearest single point at which the two eyes can direct their visual lines, normally about three inches from the eyes in young people.

Nystagmus An involuntary, rapid movement of the eyeball; it may be lateral, vertical, rotary, or mixed.

Oculist or Ophthalmologist A physician who is licensed to practice medicine and surgery and who specializes in diagnosis and treatment of defects and diseases of the eye. An M.D. is used after the name.

Oculus Dexter (O.D.) Right eye.

Oculus Sinister (O.S.) Left eye.

Oculus Uterque (O.U.) Both eyes.

Ophthalmia Inflammation of the eye or of the conjunctiva.

Ophthalmia Neonatorum An acute, purulent conjunctivitis in the newborn. For control purposes, it is sometimes legally defined as "an inflamed or discharging eye in a newborn baby under two weeks."

Ophthalmologist or Oculist See Oculist.

Opthalmoscope An instrument used in examining the interior of the eye.

Optic Atrophy Degeneration of the nerve tissue which carries messages from the retina to the brain.

Optic Chiasm The crossing of the fibers of the optic nerves on the lower surface of the brain.

Optic Disk Head of the optic nerve in the eyeball.

Optician One who grinds lenses, fits them into frames, and adjusts the frames to the wearer.

Optic Nerve The special nerve of the sense of sight which carries messages from the retina to the brain.

Optic Neuritis Inflammation of the optic nerve.

Optometrist A licensed, nonmedical practitioner who measures refractive errors and eye muscle disturbance. In treatment the optometrist uses glasses, prisms, and exercises only. The letters O.D. follow the name.

Orthoptic Training Series of scientifically planned exercises for developing or restoring the normal teamwork of the eyes.

Orthoptist One who provides orthoptic training.

Palpebral Pertaining to the eyelid.

Peripheral Vision Ability to perceive the presence, motion, or color of objects outside of the direct line of vision.

Phlyctenular Keratitis A variety of keratitis characterized by the formation of pustules or papules on the cornea; usually occurs in young children and may be caused by poor nutrition. Many physicians believe it to be a tubercular condition.

Photophobia Abnormal sensitivity to and discomfort from light.

Presbyopia A gradual lessening of the power of accommodation due to a physiological change which becomes noticeable after the age of forty.

Primary Pigmentary Degeneration (See Retinitis Pigmentosa)

Prosthesis An artifical substitute for a missing eye (or other missing part of the body).

Pseudoisochromatic Charts Charts with colored dots of various hues and shades indicating numbers, letters, or patterns, used for testing color discrimination.

Pterygium A triangular fold of growing membrane which may extend toward the cornea on the white of the eye. It occurs most frequently in persons exposed to dust or wind.

Ptosis A paralytic drooping of the upper eyelid.

Refraction 1. Deviation in the course of the rays of light in passing from one transparent medium into another of different density. 2. Determination of refractive errors of the eye and correction by glasses.

Refractive Error A defect in the eye that prevents light rays from being brought to a single focus exactly on the retina.

Refractive Media The transparent parts of the eye having refractive power: cornea, aqueous, lens, and vitreous.

Retina Innermost coat of the eye, formed of sensitive nerve fibers and connected with the optic nerve.

Retinal Detachment	A separation of the retina from the choroid.
Retinitis	Inflammation of the retina.
Retinitis Pigmentosa	(Primary Pigmentary Degeneration) Hereditary degeneration and atrophy of the retina. There is usually misplaced pigment.
Retinoblastoma	The most common malignant intraocular tumor of childhood occurs usually under age 5. It is probably always congenital. (Formerly known as glioma.)
Retinoscope	An instrument for determining the refractive state of the eye by observing the movements of lights and shadows across the pupil by the light thrown onto the retina from a moving mirror.
Retinopathy	A disease of the retina, due to various causes. (Example: diabetic retinopathy.)
Retrolental Fibroplasia (RLF)	A disease of the retina in which a mass of scar tissue forms in back of the lens of the eye. Both eyes are affected in most cases, and it occurs chiefly in infants born prematurely who receive excessive oxygen.
Rods and Cones	See Cones and Rods.
S,SC (Sine Correction)	Without correction; that is, not wearing glasses.
Safety Glasses	Impact resistant; available with or without visual correction for workshop or street wear protection, for both adults and children.
Sclera	The white part of the eye — a tough covering which, with the cornea, forms the external, protective coat of the eye.
Scleritis	Inflammation of the sclera.
Scotoma	A blind or partially blind area in the visual field.
Snellen Chart	Used for testing central visual acuity. It consists of lines of letters, numbers or symbols in graded sizes drawn to Snellen measurements. Each size is labeled with the distance at which it can be read by the normal eye. Most often used for testing vision at a distance of 20 ft.
Spherical Lens	Segment of a sphere refracting rays of light equally in all meridians.
Stereoscopic Vision	Ability to perceive relative position of objects in space without such cues as shadow, size, and overlapping.
Strabismus (Squint, Cross-Eye, Esotropia, etc.)	Failure of the two eyes simultaneously to direct their gaze at the same object because of muscle imbalance.
Strephosymbolia	A disorder of perception in which objects seem reversed as in a mirror. A reading difficulty inconsistent with a child's general intelligence beginning with confusion between similar but oppositely oriented letters (b-d, p-q) and a tendency to reverse direction in reading.
Sympathetic Opthalmia	Inflammation of one eye due to an infection in the other eye.
Synechia	Adhesion, usually of the iris to cornea or lens.
Tangent Screen	A large black or gray curtain supported by a framework on which the normal central field and blind spot have been lightly outlined. This instrument is used for measuring the central field of vision.
Tonometer	An instrument for measuring pressure inside the eye, called intraocular pressure.
Trachoma	A form of infectious kerato-conjunctivitis caused by a specific virus which in the chronic form produces severe scarring of the eyelids and cornea.
Tunnel Vision (Gun-Barrel, Tubular)	Contraction of the visual field giving the affected individual the impression of looking through a tunnel.
Uveal Tract	Entire vascular coat of the eyeball which consists of the iris, ciliary body, and choroid.
Uveitis	Inflammation of the uveal tract of the eye.
Vision	The art or faculty of seeing; sight.
Visual Acuity	See Central Visual Acuity
Vitreous (Vitreous Humor)	Transparent, colorless mass of soft, gelatinous material filling the eyeball behind the lens.
Vitreous Opacities	See Floaters.